

**United States Department of the Interior
Bureau of Land Management**

**Sand Wash Basin Wild Horse Herd Management Area
Bait/Water Trapping Gather/Population Control
Environmental Assessment**

Little Snake Field Office
455 Emerson Street
Craig, Colorado

DOI-BLM-CO-N010-2016-0023-EA

August 2016



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CHAPTER 1 – INTRODUCTION

1 PURPOSE & NEED

1.1 Introduction

With passage of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA), Congress recognized wild horses are living symbols of the pioneer spirit of the West. The Secretary of the Interior was ordered to manage wild, free-roaming horses and burros in a manner designed to achieve and maintain a thriving natural ecological balance on the public lands. From the passage of the Act through the present day, the Bureau of Land Management (BLM) and the Little Snake Field Office (LSFO) has endeavored to meet the requirements of the Act. Throughout this period, BLM experience has grown, and the knowledge of the effects of current and past management of wild horses and burros has increased. At the same time, nationwide awareness and attention has grown. Program goals have expanded beyond simply establishing a thriving natural ecological balance (TNEB) by setting appropriate management levels (AML) for individual herds. In addition, goals now include achieving and maintaining healthy populations and slowing population growth through implementation of population growth suppression (PGS) treatments.

At the national level, holding facilities for excess and un-adopted horses are at or exceeding their capacity; therefore, gathering and removing large number of horses for the purpose of achieving and maintaining the appropriate management level is a challenge at this time. BLM determines where removals should be prioritized based on limited holding space. Relying primarily on removals of excess horses to achieve TNEB is also unsustainable and fiscally impossible. Population controls, such as the use of fertility control vaccines or permanent sterilization, are being pursued as an alternative to removal of excess horses, to help control the population of wild horses in HMAs and to bring down the number of excess wild horses on the range over the long term. If used as the sole approach to controlling population numbers, contraception would not allow the BLM to achieve the original population objectives; however, in conjunction with other techniques (e.g., removals of excess animals and adoption) and through incorporation of other population control techniques (e.g., sex ratio adjustments, sterilization), it provides a valuable tool in a larger, adaptive management approach to wild horse and burro management.

Furthermore, the Humane Society of the United States (HSUS, 2010) has also completed analysis of the potential of population control with the modeling work showing that *“more aggressive changes in earlier years will yield more dramatic decreases in later years, obviating the need for removing any horses from the range in the future while still achieving AML”*. The HSUS concludes that the current management program is unsustainable and that *“by replacing the current gather-and-remove programs with gather-treat-and-release programs, the BLM would save approximately \$204 million dollars over 12 years while achieving and maintaining Appropriate Management Levels (AML) on wild horse Herd Management Areas (HMA) on public lands in the U.S”*. The HSUS strongly supports the increased use of fertility control and other population controls, advocating the expansion of these programs as alternatives to gathers and off range pasture (ORP, formerly

long-term holding). A Capture, Treat and Release strategy that could be possible with repeated treatment of fertility control is a “win-win” for everyone and is a significant turning point for BLM (de Seve and Bowles-Griffin 2013).

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the Sand Wash Basin Herd Management Area Fertility Control project and selective removal via water/bait trapping as proposed by the BLM-LSFO.

This EA is a site-specific analysis of potential impacts that could result with the implementation of the proposed action or alternatives to the proposed action. This EA assists the BLM in project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A DR, including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in the Little Snake Resource Management Plan (October 2011) as amended by the Northwest Colorado Greater Sage-Grouse Approved Resource Management Plan Amendment (September 2015).

1.2 Background

The Sand Wash Basin Herd Management Area is located 45 miles west of Craig, Colorado, in the Sand Wash Basin. The HMA encompasses 157,730 total acres, of which 154,940 acres are managed by the BLM, 1,960 acres are private and 840 acres are managed by the State of Colorado. The HMA has a gradual elevation change from 8,100 feet at Lookout Mountain to 6,100 feet at the south end of the HMA. The interior of the HMA consists of gently rolling to moderately steep slopes cut by numerous small drainages leading into Sand Wash Draw. Yellow Cat Wash and Dugout Wash drain most of the eastern half of the basin. Bordering Sand Wash Basin on the southwest is Dry Mountain, a small mountain range with elevations ranging from 6,900 to 7,500 feet. To the northwest, the HMA is bordered by the Vermillion Bluffs, a large extended rim with elevations ranging from 6,800 to 8,100 feet. The HMA is bordered on the east side by Sevenmile Ridge which extends in a north/south direction from Highway 318 northerly along the entire east side of the HMA towards Nipple Rim.

The appropriate management level (AML) is defined as the number of wild horses that can be sustained within a designated HMA which achieves and maintains a thriving natural ecological balance in keeping with the multiple use management concept for the area. The AML values were established through prior decision-making processes and re-affirmed through the Record of Decision (ROD) and the Approved Little Snake Resource Management Plan (October 2011). These land use planning documents have established the AML for the Sand Wash Basin HMA as a range of 163 to 362.

Table 1. Sand Wash Basin HMA Wild Horse Population

Year	Population	Number over high end of AML
2006	373	11
2007	386	24
2008	425	63
2009	217 ¹	0
2010	256 [*]	0
2011	296 [*]	0
2012	341 [*]	0
2013	408 [*]	46
2014	481 [*]	119
2015	548 [*]	186
2016	550 [*]	190
¹ – A BLM gather occurred in October of 2008 and a fertility management pilot project was implemented with HSUS. [*] – Volunteer visual ground count as of 6/23/2016. This does not include foals.		

In the 2013 National Academy of Sciences’ (NAS) report “Using Science to Improve the BLM Wild Horse and Burro Program: A Way Forward”, the science review committee reported annual population statistics are probably substantial underestimates of the actual number of horses occupying public lands inasmuch as most of the individual HMA population estimates are based on the assumption that all animals are detected and counted in population surveys—that is, perfect detection. A large body of scientific literature focused on inventory techniques for horses and other large mammals clearly refute that assumption. The literature shows estimates of the proportion of animals missed on surveys ranging from 10 to 50 percent, depending on terrain ruggedness and tree cover (Caughley, 1974a; Siniff et al., 1982; Pollock and Kendall, 1987; Garrott et al. 1991a; Walter and Hone, 2003; Lubow and Ransom, 2009). The committee has little knowledge of the distribution of HMAs with respect to terrain roughness and tree cover, but state that a reasonable approximation of the average proportion of horses undetected in surveys throughout western rangelands may be 20% to 30%. An earlier National Research Council committee and a Government Accountability Office report concluded that reported statistics were underestimates. (National Academy of Sciences, 2013) Population estimates in the Sand Wash Basin HMA are likely to be close to the actual number of horses due to the volunteers that observe the horses in a consistent manner, and track foaling and death loss.

The 2013 NAS Report supported these population growth estimates based on the literature they reviewed. This has resulted in the BLM shifting program emphasis beyond just establishing AMLs to also conducting wild horse gathers to include a variety of management actions that further facilitate the achievement and maintenance of viable and stable wild horse populations and a “thriving natural ecological balance”. Management actions resulting from shifting program emphasis include: increasing fertility control, adjusting sex ratio within the herd and collecting genetic baseline data to support genetic health assessments.

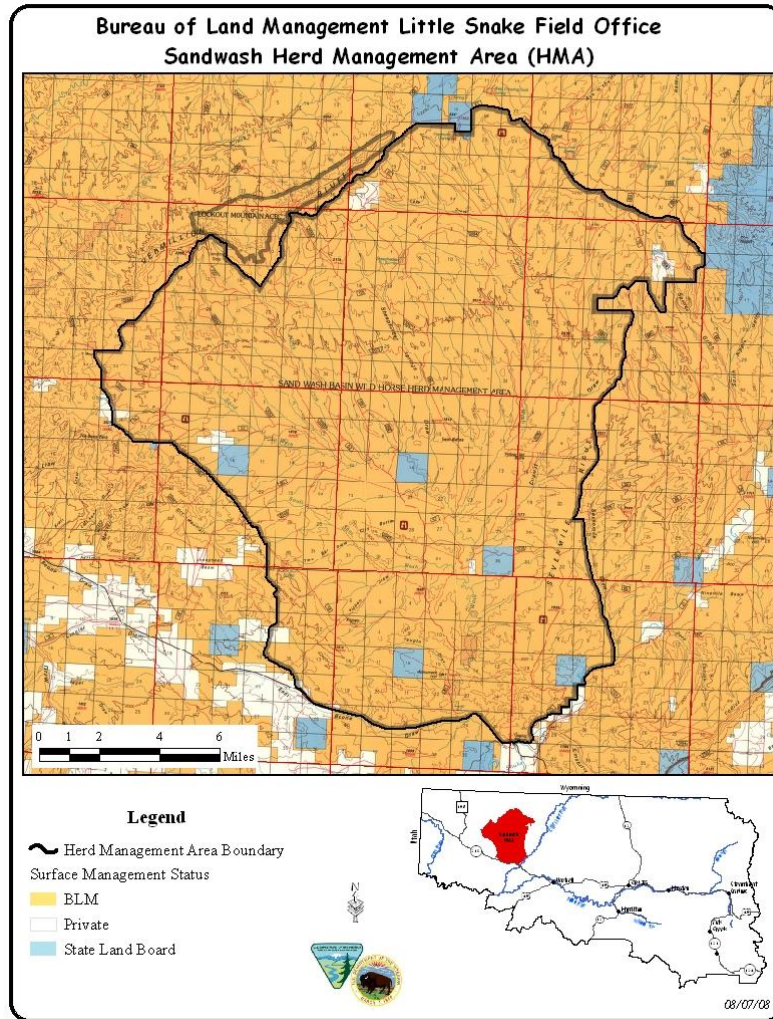
Based upon all information available, the BLM determined that approximately 444 excess wild horses exist within the gather area, which would need to be managed to move toward maintaining a TNEB, meet local and national wild horse program goals, and other program goals. This assessment is based on the following factors and BLM objectives including, but not limited to:

- Wild horse population estimates and distribution (Appendix H).
- Range trend monitoring and results (Appendix G).
- Actual use by livestock has varied from 10%-70% of authorized use, depending on water and available forage conditions.
- Consideration of preserving and maintaining Greater Sage-Grouse habitat, including Sagebrush Focal Areas.
- Slow horse population growth to maximize the time between gathers;
- Reduce the number of wild horses being placed
 - for adoption/sale; or
 - in short-term holding or long-term pastures;
- Maintain wild horse populations within AMLs; and
- Manage the HMAs to achieve and maintain a thriving natural ecological balance, and multiple-use relationship.
- Maintain sex ratios and age structures, which would allow for the continued physical, reproductive, and genetic health of horses.
- Preserve and maintain a healthy and viable wild horse population that will survive and be successful during poor years when elements of the habitat are limiting due to severe winter conditions, drought, or other uncontrollable and unforeseeable environmental influences to the herd. Manage the HMA herds as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.

The LSFO proposes to gather the majority of the mares within the Sand Wash Basin Herd Management Area (HMA) via bait/water trapping. When the horses are confined in the trap, they would be identified for removal or to be left on the range. Mares that were to be left on the range would then be treated with a single dose of the PZP vaccine known as Zonastat-H and then released back to the range. Under an agreement with the Great Escape Mustang Sanctuary (GEMS), the BLM would remove up to 50 younger horses for placement into the GEMS training and adoption program.

ZonaStat-H is the liquid native Porcine Zona Pellucida (PZP) and is federally approved by the Environmental Protection Agency (EPA) and registered under the number 86833-1. PZP is a naturally occurring pig protein which degrades quickly in the environment. If eaten, it is digested like any other protein and cannot pass through the food chain (Kirkpatrick *et al.* 2006).

The analysis area is located in Townships 8 to 11 North, Ranges 97 to 100 West, various sections, Sixth Principle Meridian, Moffat County, Colorado.



More information on PZP can be found at:

<http://www.pzpinfo.org/pzp.html>

http://www.blm.gov/wo/st/en/prog/whbprogram/science_and_research/fertility_control.html

Additional information about the BLM's wild horse and burro program can be found at:

<http://www.blm.gov/wo/st/en/prog/whbprogram.html>

Prior to 2008, the management of the Sand Wash Basin HMA has been to gather and remove horses. A percentage of released mares from the last gather in 2008 were treated with a pelleted form of PZP followed by a booster dose of the vaccine administered remotely in the field. Since 2008, the BLM has partnered with the Humane Society of the United States (HSUS) and the Sand Wash Basin Advocate Team (SWAT) to continue the field application of PZP. However, due to the size of the HMA, the dispersed nature of the horses, and lack of trained volunteers, only 40 to 50 mares per year have been treated. There has been a reduced foaling rate following the treatments; however to be as effective as possible, at least 80% of the mares in the HMA must be treated on a yearly basis. To date, approximately 25% of the population of the mares in

the HMA is treated on a yearly basis and the foaling rates have decreased from a high seen in 2009 of 34% to 19% in 2015.

Gather and removal management has resulted in an over population of horses in ORPs as there is not enough adoption demand to place all of the gathered horses into private care nationwide. Fertility control treatment alone has resulted in some population suppression, but not enough. Combining a bait/water trapping gather, PZP application to at least 80% of the mares, together with a small removal of 50 horses should help the BLM achieve population management goals over the long term.

1.3 Purpose and Need

The purpose of the Proposed Action is to achieve and maintain appropriate management level (AML) through implementation of a population growth suppression program to reduce population growth rates and removal of excess wild horses from the HMA. The Sand Wash Basin wild horse herd population appropriate management level of 163 to 362 adult horses as established by the Little Snake Field Office RMP. The current estimated population of the HMA is 607 horses including foals of the year. It is estimated that there are 550 adult horses and 57 foals of the year; for an estimated excess number of 245 over the upper limit of AML and 444 over the lower limit of the AML. The proposed action, while not immediately reducing the herd to within the range of AML, would help reduce the population over time and thereby reduce the need for a large, costly, helicopter gather and removal operations. The BLM needs to maintain wild horse herd numbers to levels consistent with the AML while managing herd genetic variability and the health of individual wild horses and to make progress towards achieving standards of rangeland health. In addition, keeping the number of horses close to the AML aids in making an in the field darting program more effective. The need for the Proposed Action is to maintain the population in a thriving natural ecological balance by making progress towards attaining AML and to analyze the impacts to the wild horses from the utilization of a fertility control program.

1.4 Plan Conformance Review

The Proposed Action and alternatives are subject to and have been reviewed for conformance with the following plans (43 CFR 1610.5, BLM 1617.3):

Name of Plans: Little Snake Record of Decision and Resource Management Plan, October 2011
North West Colorado Greater Sage-Grouse Resource Management Plan
Amendment, September, 2015

Decision Language: The Proposed Action is in conformance with the LUP because it is specifically provided for in the following LUP goals, objectives, and management decisions:

Section/Page: **Wild Horses** - page RMP-26.

Manage the Sand Wash Basin wild horse herd and its habitat to encourage herd health while maintaining a thriving, natural, ecological balance of rangeland resources. Objectives for achieving this goal include:

- Manage the Sand Wash Basin wild horse herd as an integral part of the public lands ecosystem at an appropriate management level (AML). Periodically reevaluate the existing AML to ensure herd size remains compatible with other resources.
- Recognize and proactively respond to potential conflicts, as they occur, between the wild horse herd and other resources.
- Maintain herd management area (HMA) boundary fences to encourage wild horses to remain within the HMA. If horses relocate outside the HMA, attempt to herd horses back inside the HMA as expeditiously as possible.

Northwest Colorado Greater Sage-Grouse Amendment Wild Horses and Burros (WHB)

Objective WHB-1: Manage wild horses in a manner designed to 1) avoid reductions in grass, forb, and shrub cover, and 2) avoid increasing unpalatable forbs and invasive plants such as *Bromus tectorum*.

Management Decisions (MD)

MD WHB-1: (ADH) Manage wild horse population levels within established appropriate management levels.

MD WHB-2: (ADH) Prioritize gathers in GRSG PHMA, unless removals are necessary in other areas to prevent catastrophic environmental issues, including herd health impacts. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.

MD WHB-4: (PHMA) For all BLM HMAs within PHMA, prioritize the evaluation of all appropriate management levels based on indicators that address vegetation structure/condition/composition and measurements specific to achieving GRSG habitat objectives. Consider GRSG habitat requirements in conjunction with all resource values managed by the BLM, and give preference to GRSG habitat unless site-specific circumstances warrant an exemption.

MD WHB-6: (PHMA) When conducting NEPA analysis for wild horse management activities, water developments, or other rangeland improvements for wild horses in PHMA, address the direct and indirect effects to GRSG populations and habitat. Implement any water developments or rangeland improvements using the criteria identified for domestic livestock identified above in PHMA.

Objective SSS-1: Maintain and enhance populations and distribution of GRSG by protecting and improving sagebrush habitats and ecosystems that sustain GRSG populations.

1.5 Relationship to Statutes, Regulations or Other Plans

The Proposed Action implements actions recommended in the following Laws, Plans, Acts, and Policies:

- The Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195)
- Federal Land Policy and Management Act of 1976 (Public Law 94-579)
- Public Rangelands Improvement Act of 1978 (Public Law 95-514)
- 43 CFR §4700
- LSFO Environmental Assessment # CO-100-2008-050
- LSFO Documentation of NEPA Adequacy (DNA) # DOI-BLM-CO-N010-2013-0029

1.6 Identification of Issues/Internal and External Scoping/Public Participation

NEPA regulations (40 CFR §1500-1508) require that the BLM use a scoping process to identify potential significant issues in preparation for impact analysis. The principal goals of scoping are to allow public participation to identify issues, concerns, and potential impacts that require detailed analysis.

External Scoping Summary: The initiation of this proposed action was posted on the ePlanning website on March 23, 2016; <https://eplanning.blm.gov/epl-front-office/eplanning/projectSummary.do?methodName=renderDefaultProjectSummary&projectId=59798>

Internal Scoping Summary: The Proposed Action and Alternatives were introduced to the Little Snake NEPA interdisciplinary team, which is composed of resource specialists, April 11, 2016. This team identified resources within the Sand Wash Basin HMA which might be affected and considered potential impacts using current resource data.

Issues Identified: For the purpose of BLM NEPA analysis, an “issue” is a point of disagreement, debate, or dispute with a Proposed Action based on some anticipated environmental effect. The ID team discussed potential issues that could arise from the indirect effects of the No Action Alternatives.

The following issues were identified:

- The removal is not large enough to reach the AML
- Allowing the herd to exceed AML is in direct conflict with the LSFO RMP/ROD and the NW Colorado Greater Sage-Grouse RMP Amendment
- The length of time and number of BLM staff it would take to conduct a bait gather verses a helicopter gather

1.7 Decision to be Made

Based on the analysis contained in this EA, the BLM will decide whether to approve or deny the Proposed Action, and if so, under what terms and conditions. Under the NEPA, the BLM must determine if there are any significant environmental impacts associated with the Proposed Action warranting further analysis in an EIS. The Field Manager is the responsible officer who will decide one of the following:

- To approve fertility control management assisted by bait/water trapping and removal of excess wild horses;
- To approve fertility control management assisted by bait/water trapping and no removal of excess wild horses;
- To analyze the effects of gather and removal operations in an EIS; or
- To deny wild horse fertility control management, bait/water trapping and gather and removal operations in the Sand Wash HMA.

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

2.1 Introduction

The alternatives discussed in this section are: Alternative A – Proposed Action: Conduct fertility control management assisted by bait/water trapping and remove excess wild horses.; Alternative B – Fertility control management with bait trapping assistance and no removal; and Alternative C - No Action (take no action to control the population of wild horses in the Sand Wash Basin HMA).

The No Action is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

2.2 Alternative A - Proposed Action

The proposed action is to implement a long term management plan over the span of approximately ten years, which would include administering fertility control treatment to slow population growth and remove excess wild horses from the Sand Wash Basin HMA and surrounding areas so that the AML of 163-362 would be reached and maintained as identified in the approved RMP. Application of fertility control could happen during bait/water trapping or in a field darting scenario. Removal of excess wild horses would occur when animals that are likely to be adopted are caught. In 2016, it is estimated that up to 50 excess wild horses would be sent to the GEMS for adoption. The number of excess wild horses removed in the future may vary depending on holding space at the GEMS or BLM preparation and holding facilities. The number of excess horses removed from the HMA would not reduce the population to below the low end of AML within the Sand Wash Basin following implementation of the proposed action. Regulatory issues concerning the use of PZP in equids, captive or free-roaming, are enforced by the Environmental Protection Agency (EPA) (EPA Registration No. 86833-1). All requirements for EPA compliance are incorporated into the BLM Standard Operating Procedures (Appendix B).

The primary gather method would utilize the use of bait and water to trap wild horses within the Sand Wash Basin HMA. It is expected that during trapping some of the horses may leave the area and return at a later time; therefore, some of the wild horses in this area would not be trapped or treated. All the mares that are trapped and selected for release would be treated with the population growth suppression vaccine Porcine Zona Pellucida (PZP) to prevent the animals from conceiving the following year. PZP is a vaccine formulation with an expected efficacy of

approximately 12 months.

Any mares that were not caught and treated during the trapping operation would be candidates for application of fertility control through field darting. The number of mares treated annually would fluctuate depending on mares selected to be treated vs. not treating some, access to the HMA, horse distribution, and horse tolerance to human presence. All treated mares would be monitored to determine effectiveness of the treatments. While in the trap the horses would be identified for adoption or release due to age, gender and/or other desirable characteristics.

The Proposed Action incorporates the following actions and management requirements:

- All gathering and handling of wild horses would be in conformance with Instruction Memorandum No. 2015-151 presented in Appendix A.
- The fertility control treatment would be conducted in accordance with Instruction Memorandum No. 2009-090 presented in Appendix B.
- PZP mixing procedures would follow those listed in Appendix C. The PZP protocol would be examined annually, in line with any new instructions provided by the Science & Conservation Center (SCC).
- Horse Immunocontraception Data Sheets would be prepared and updated as presented in Appendix D. An individual mare's previous records would be reviewed prior to any darting activity.
- Mares would be individually marked and/or be individually recognizable without error. No mare would be treated unless she has been identified for treatment.
- PZP would be administered in the one year liquid doses and go through 2026. If monitoring shows successful applications, no negative reactions and reduction in foaling rates, the fertility control treatments could continue beyond 2026 as long as it can be reasonably concluded that no new information and no new circumstances arise that need to be considered and those that are analyzed within this document have not substantially changed within the HMA. Fertility control applications would also depend on annual funding and the presence of qualified PZP applicators.
- Ideal time to booster previously treated mares would be between February through April of each year. However, if a previously treated mare is missed, a booster shot could be administered at any time of the year. Each mare would have an identification sheet with pictures, describing any markings, brands, scars or other distinguishing marks. At the beginning of each year, a list of the mares identified for treatment would be created. That information would be loaded into a format that is easy to use in the field (book or electronic device).
- New mares (over the age of 18 months) coming into treatment would be given the primer dose between November through January of each year. New mares would receive their booster between February and April. Age would be based on when the horses are observed being new herd foals. For older previously treated horses, it would come from the treatments data sheets. Aging older untreated horses would be based off of photographs or similar documentation provided by volunteers knowledgeable of the herd/bands. For an age of a mare that cannot be

established, that mare would be allowed to raise a foal to one year of age then begin treatment.

- Primer inoculations would be administered to mares that are at least 18 months old. Mares that are 2-4 years old would be treated. The 5 year old mares would be taken off the treatment schedule until they have produced at least one foal that lives to be one year old. After a mare produces one foal that survives for a year, she would be put back on PZP treatments.
- Flexibility in determining which mares are selected for treatment is vital to the success of the fertility control program. Adjustments would be made if it is found that there is a severe reaction by an individual mare, that a mare can contribute more to genetic diversity or a mare that might have a negative effect to the genetic diversity of the herd. This information would be documented on the Data Sheet.
- If timing or funding constraints arise, a treatment priority would consider the band or herd composition and priority would be given based on age class. Priorities would be established as follows:
 - 1) 2-4 year old mares,
 - 2) mares just coming back onto treatment, and
 - 3) older mares that have received several treatments since producing a live foal.
- The annual treatment schedule, database and Data Sheets would be reviewed/approved by the authorized officer with the NW Colorado District wild horse specialist and/or darting specialist. An annual monitoring report would be prepared for the authorized officer and filed with the HMA records. This monitoring report would show PZP orders placed/costs, planned treatment schedule/actual treatments (number/dates of mares treated), lost darts, negative reactions/BLM action taken for that mare, number of new/current year foals counted/observed, unique circumstances, off road vehicular use, general rangeland condition/water availability, volunteer efforts, correspondence between/among LSFO and the Science and Conservation Center (SCC) and National Wild Horse and Burro Program (WH&B) Office and other pertinent information.

Continued field darting after the bait/water trapping operation would be conducted in a principled manner by a group of trained volunteers. It is anticipated that the volunteers would work primarily alone but occasionally there could be more than one volunteer darting in the HMA on the same day. Ordinarily, field darting activities would be conducted on foot. Access throughout the HMA would be achieved by the use of 4X4 vehicles and other off-highway vehicles (OHVs). Vehicles would be utilized on existing roads and trails in the HMA. On a case-by-case basis, the use of OHVs off existing roads and trails may be allowed for administrative purposes; however, such use shall be made only with the approval of the authorized officer. Personnel authorized for field darting of the Sand Wash Basin horses must be trained for this task and certified by the Science and Conservation Center (SCC) at ZooMontana in Billings, Montana. Additionally, all work would be conducted in accordance with the SOPs (Appendix B) and mixing procedures (Appendix C). The LSFO would work with the National WH&B Office in Reno, Nevada, and the SCC at ZooMontana to order the PZP vaccine. The SCC then prepares and ships the order to the LSFO. Each dose would consist of 100 micrograms of PZP in 0.5 cc

buffer (a phosphate buffered saline solution). Remote application would be by means of 1.0 cc Pneu-dart darts, with either 1.25 or 1.5 inch barbless needles, delivered by either Dan-inject or Pneu-dart CO2 powered or cartridge fired projectors. An attempt would be made to recover all darts (normally about a 98% recovery is expected). The LSFO would apply adaptive management principles. If policies change or the vaccine effects or effectiveness prove undesirable, then the application of the PZP fertility control measures would be stopped or reconsidered based on new scientific information. If PZP is dropped from BLM use and is replaced by another drug or immunization for fertility control purposes, that method would be applied by the LSFO in future treatments.

PZP vaccine use in wild horse herds has been studied extensively for more than two decades, with papers published in peer-reviewed scientific journals by experienced reproductive physiologists, equine scientists, wildlife biologists, geneticists, and animal behaviorists. This scientific information confirms the safety, high efficacy, and absence of long-term behavioral, physical, or physiological effects from the vaccine. This data is supported by field data, with statistically adequate sample sizes. Data was collected by trained, unbiased individuals, who adhere to established research methodology within his or her respective field (Kirkpatrick et al. 2010).

Bait/Water Trapping

It is essential that at least 80% (or as close as possible) of the mares in the Sand Wash Basin HMA are treated with PZP for the population management to be effective. In order to do this, large numbers of horses must be congregated in a certain location within the HMA. The BLM would capture numerous individual horses and bands; then, selectively remove wild horses. The horses selected for removal would be determined by the BLM, and volunteers familiar with the HMA. The final decision of which horses to remove would remain with the BLM if agreement on which horses to remove could not be reached. Up to 50 horses would be sent to GEMS for training and adoption after going to a BLM holding facility.

Multiple trap sites would be used to detain the wild horses long enough for the application of PZP and to determine if any of the horses in the trap were selected for removal. The traps would consist of portable panel pens set up either at water sources or areas frequented by wild horses. Hay or other attractants (such as mineral or processed cubes i.e., cake) would be used to lure horses to the area. Prior to any wild horses being captured, the trap or bait may be in place to accustom wild horses to their presence. The acclimation to the panels and gather equipment creates a low stress trapping method. During the acclimation period, the horses would experience some stress due to the panels being setup and perceived access restriction to the water/bait source. When a band of horses or individuals enters the trap, the gate would be closed if the group or an individual in it needed to be caught. Any mares not identified for removal would be treated with PZP (if targeted for treatment) and released back onto the range.

When actively trapping wild horses, the trap would be manned or checked on a daily basis by either BLM personnel or authorized contractor staff. Horses would be either removed immediately or fed and watered for up to several days prior to transport to a holding facility. Existing roads would be used to access the trap sites.

Trap sites would most likely be placed at Coffeepot Spring, Sheepherder Spring, Dugout Spring, Lake Draw Well/pond, Two Bar Spring, G-Gap Spring and along Moffat County Road 75 and 67. Other sites may be used as necessary based upon water availability and success of the operation. The exact location of the gather sites and holding sites may not be determined until immediately prior to the gather because the location of the animals on the landscape is variable and unpredictable. The BLM would make every effort to place temporary gather sites in previously disturbed areas and in areas that have been inventoried and have no cultural resources, sacred sites or paleontological sites. If a new gather site is needed, a cultural inventory would be completed prior to using the new site. If cultural resources are encountered, the location of the gather site would be adjusted to avoid all cultural resources.

No trap sites would be set up on or near greater sagegrouse leks, riparian areas, cultural resource sites, or Congressionally Designated Wilderness Areas. Gather sites would be located in previously disturbed areas. All trap sites and holding facilities on public lands would be recorded with Global Positioning System equipment. In general, gather sites and holding corrals would not be located where sensitive animal and/or plant species are known to occur nor within crucial intact habitat for big game species.

Water sources such as wells may be temporarily turned off and tanks drained to encourage horses to move to an area or other water source where they can be safely trapped. If animals show signs of water deprivation and don't move, waters would be re-opened. Horses identified for removal would be sorted at the trap site and transported to the Sand Wash Basin corrals with horse or stock trailers pulled behind trucks.

These horses would then be transported to a BLM off range corrals (ORC's), formerly short-term holding facility) to be prepared for training and adoption. This would entail veterinarian examination and care, permanent freeze mark placed on the left side of the neck, vaccinations, feed and care, and gelding.

Appropriate site-specific clearance and review for cultural resources and species of concern would be conducted at each trap site prior to set up (if an area is not previously utilized or is without developments on site). The areas would be monitored for noxious weeds over the next several years. All sites would be assessed for post gather reseeding. All capture and handling activities (including capture site selection) would be conducted in accordance with the standard operating procedures (SOPs) found in Appendix A.

Horses Targeted for Selective Removal

See Appendix E for a list of horses that are proposed to not be selected for removal. These horses would be allowed to stay on the range for genetic maintenance. These horses may be removed if gather objectives could not be reached in other ways. Other horses that are not on the list would likely be removed before horses on this list, depending on gather priorities and needs.

2.3 Alternative B – Fertility Control Management with Bait Trapping Assistance and No Removals

Under this alternative, all actions would be the same as described under the Proposed Action; however no wild horses would be removed from the range, placed at the GEMS, or in to ORPs. Therefore, there would be no further handling of animals after the PZP vaccine is administered.

2.4 Alternative C - No Action

Under the No Action Alternative, no population growth suppression action or wild horse removals would take place. The population of the wild horses in the Sand Wash Basin HMA would continue to grow at the national average rate of increase seen in the majority of HMAs of 20-25% per year. Nationally, there is a shortage of both off range corrals and off range pasture space for wild horses that have been removed from the range. Until adequate holding space becomes available, removals are not being authorized. The LSFO would lose this opportunity to remove up to 50 wild horses and place with GEMS and it is unknown when space would become available in the national system.

2.5 Alternatives Considered but Eliminated from Detailed Analysis

Gather Horses and Remove to low end of AML Once Every Three Years

Under this alternative, wild horses would continue to increase at levels seen historically. This would lead to overpopulation on the range, at ORC, ORP facilities as far more horses would need to be gathered and removed than what the adoption demand can place into private care. This approach has proven unsustainable for the BLM.

Wild Horse Numbers Controlled by Natural Means

This alternative was eliminated from further consideration because it is contrary to the WFRHBA, which requires the BLM to prevent the range from deterioration associated with over population of wild horses. An alternative of using natural controls to achieve and maintain the established AML has not been shown to be feasible in the past or practical. Wild horses in the Sand Wash Basin HMA are not substantially regulated by predators or other natural factors. In addition, wild horses are a long-lived species with documented foal survival rates exceeding 95%, and they do not self-regulate their population growth rate. This alternative would result in a steady increase in horse numbers which would eventually exceed the carrying capacity of the range until severe and unusual conditions that occur periodically-- such as blizzards or extreme drought-- causes catastrophic mortality of wild horses. By the time such catastrophic mortality occurs, the range could be irreparably degraded through the loss of native vegetative plant communities, leaving the range vulnerable to the spread of invasive and noxious plant species and unable to recover naturally.

Raising the Appropriate Management Levels for Wild Horses

Current monitoring data does not support raising the AML for wild horses within the current multiple use balance established under the RMP. This alternative was not brought forward for detailed analysis because it is outside of the scope of the analysis, and would not be in conformance with the 2011 Little Snake Field Office ROD and Approved RMP which direct the Secretary to immediately remove excess wild horses, and is inconsistent with the BLM's multiple use mandate.

Alternative D of the Little Snake Proposed Resource Management Plan/Final Environmental Impact Statement (October 2011) analyzed an alternative under which the Sand Wash Basin HMA would be designated as a wild horse range and managed principally, though not exclusively, for wild horses. This alternative would still have included population management, though the AML may have been raised as AUMs allocated for livestock grazing would have been reallocated to wild horses. This alternative was not selected in the RMP.

Helicopter Drive Trap Gather and Remove to Low AML

The helicopter drive trapping method was considered but not carried forward for analysis. The limited number of horses to be removed was small enough that bait/water trapping was a feasible alternative for the proposed action and alternatives. However, this may be an alternative in future gathers depending on management needs.

Remove or Reduce Livestock within the HMAs

This alternative would leave wild horses above AML on the range and instead remove livestock. This alternative is not in conformance with the 2011 Little Snake ROD and Approved RMP (October 2011) and would therefore require a land-use plan amendment. It was therefore not brought forward for detailed analysis. Livestock grazing under the existing RMP is reduced or eliminated following the process outlined in the regulations found at 43 CFR Part 4100, not through a wild horse management decision.

Monitoring and evaluation of livestock grazing in allotments within the Sand Wash Basin HMA is in accordance with the Little Snake Record of Decision and Approved Resource Management Plan dated October 2011. This action is specifically provided for in Management Decisions 2.14 Livestock Grazing RMP-41 which lists the following goals, objectives and management actions:

Goal A:

Manage resources, vegetation, and watersheds to sustain a variety of uses, including livestock grazing, and to maintain the long-term health of the rangelands. Objectives for achieving this goal include:

- Maintain and improve forage species diversity and abundance by managing to meet plant reproductive and physiological needs. Minimize conflicts between livestock and other grazing animals in areas of increased pressure on forage and riparian zones. Manage plant utilization by all foraging species at a level that maintains plant health and protects watersheds.

Goal B:

Provide for efficient management of livestock grazing allotments. Objectives for achieving this goal include:

- To sustain flexible and viable agriculture operations and provide the opportunity to create Reserve Conservation Allotments (RCA) by partnering with State, federal, or private landowners when lands or permits become available, without requiring involuntary animal unit month (AUM) relinquishments or transfers. An RCA is a vacant allotment with no attached grazing preference whose purpose is to provide alternative forage for BLM permittees/lessees during the rest requirement while their customary allotment is

undergoing rangeland recovery from natural disturbances (i.e. fire) or restoration projects.

Goal C:

Contribute to the stability and sustainability of the livestock industry.

Management Actions: Allowable Uses and Actions

Livestock grazing will be managed by using standards and guidelines processes, while working closely with permittees/lessees to develop sustainable ranching operations. Appropriate actions for improving allotments that do not meet the Colorado standards and guidelines could include, but will not be limited to, adjustment of permitted AUMs, modified turnout dates, livestock water developments, range improvements, modified grazing periods and grazing systems, resting areas during the growing season, closing areas, riparian pastures, enclosures, implementation of forage utilization levels, and livestock conversions. Livestock grazing will be allowed to the extent of existing federal preferences, shown in Appendix H (of the Little Snake River RMP), until monitoring studies and land health evaluations determine otherwise on an allotment specific basis. Appropriate action will be taken where existing livestock grazing management is determined to be a significant causal factor for not meeting land health standards.

Rangelands will be monitored, focusing on allotments where land health standards have not been met and/or riparian assessments are “functioning at risk”, “non-functional”, or are in a “downward trend.” Land Health Assessments and determinations of whether standards are being met will be one factor that may be considered in setting criteria for where vegetation treatments are needed and if treatments should be implemented (Vegetation, Section 2.4). Vegetation treatments and other range improvements will be considered to improve rangeland diversity, condition, and sustainability by actions that may include, but are not limited to, the control of pinyon-juniper encroachment and decadent sagebrush. BLM will work closely with CPW to reduce livestock/big game conflicts so as to improve vegetative and forage conditions. Criteria in Appendix F (of the Little Snake River RMP) will be used to establish RCAs. Management plans will be developed for all allotments to be used as an RCA. Criteria for permittee/lessee use include:

- Priority will be given to those permittees/lessees whose customary allotments are under an approved rangeland restoration/recovery project.
- Emergency conditions, such as wildfire.
- NOT to be used for drought or for overuse of customary allotment. Exploration (including seismic exploration, drilling, or other development or production activity) will generally not be allowed on domestic sheep lambing grounds during lambing activity. Lambing activities usually fall between April 10 and June 30 and last for approximately six weeks. Dates for the six week closure will be determined for each operation as local conditions dictate.

CHAPTER 3 – AFFECTED ENVIRONMENT AND EFFECTS

3.1 Introduction

Affected Resources:

The CEQ Regulations state that NEPA documents “must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in an environmental assessment (EA). Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts. Table 1 lists the resources considered and the determination as to whether they require additional analysis.

Table 1. Resources and Determination of Need for Further Analysis

Determination ¹	Resource	Resource Issue/ Rationale for Determination	Specialist Initials	Date
Physical Resources				
NI	Air Quality	Activities associated with wild horse management that may affect air quality, namely dust and exhaust from operation of vehicles as well as dust from hoof action, fall below EPA emission standards for the six criteria pollutants of concern (sulfur dioxide, nitrogen oxide, ground-level ozone, carbon monoxide, particulate matter [both PM _{2.5} and PM ₁₀], and lead). Furthermore, vehicle operation and wild horse activities are not a significant source of these pollutant emissions that do occur in Moffat County. Impacts to air quality caused by either alternative are therefore considered negligible.	EJS	7/14/16
NP	Floodplains	No floodplains exist in the project area.	EJS	7/14/16
NI	Hydrology, Ground	There is no reason to expect any of the alternatives would affect groundwater hydrology.	EJS	7/14/16
NI	Hydrology, Surface	There would be no impacts to surface water hydrology from the Proposed Action or alternatives.	EJS	7/14/16
NI	Minerals, Fluid	There would be no impacts to fluid mineral from the Proposed Action or alternatives.		
NP	Minerals, Solid	There are no solid mineral authorizations in the area of the proposed action	JAM	4/19/16
PI	Soils	See Section 3.2.1 for detailed analysis.	EJS	7/14/16
NI	Water Quality, Ground	There is no reason to expect any of the alternatives would affect groundwater quality.	EJS	7/14/16

Determination¹	Resource	Resource Issue/ Rationale for Determination	Specialist Initials	Date
PI	Water Quality, Surface	See Section 3.2.2 for detailed analysis	EJS	7/14/16
Biological Resources				
PI	Invasive, Non-native Species	See Section 3.3.1 for detailed analysis.		
PI	Migratory Birds	See Section 3.3. for detailed analysis.	DMA	7/14/16
PI	Special Status Animal Species	See Section 3.3.2 for detailed analysis.	DMA	7/14/16
NP	Special Status Plant Species	There are no federally listed threatened, endangered, or BLM sensitive plant species populations present in this allotment.		
PI	Upland Vegetation	See Section 3.3.3 for detailed analysis.		
PI	Wetlands and Riparian Zones	See Section 3.3.4 for detailed analysis.	EJS	7/14/16
NI	Wildlife, Aquatic	None of the ponds or washes in Sandwash provide habitat for fish or amphibians. A few section of the Little Snake River border the HMA, however, traps would not be constructed in this area.	DMA	7/14/16
PI	Wildlife, Terrestrial	See Section 3.3.2 for detailed analysis.	DMA	7/14/16
PI	Wild Horses	See Section 3.3.6 for detailed analysis		
Heritage Resources and the Human Environment				
PI	Cultural Resources	See Section 3.4.1 for further discussion.	BSN	5/9/16
NI	Environmental Justice	According to Census 2012, the only minority population of note in the impact area is the Hispanic community of Moffat County. Hispanic or Latino represented 14.2% of the population, considerably less than the Colorado state figure for the same group, 21.0%. Blacks, American Indians, Asians and Pacific Islanders each accounted for around 1% of the population, below the comparable state figure in all cases. The census counted 12% of the Moffat County population as living in families with incomes below the poverty line, compared to 12.9% for the entire state. Both minority and low income populations are dispersed throughout the county therefore no minority or low income populations would suffer disproportionately high and adverse effects as a result of any of the alternatives.	LM	4/21/16
PI	Hazardous or Solid Wastes	See Section 3.4.3 for further analysis		

Determination¹	Resource	Resource Issue/ Rationale for Determination	Specialist Initials	Date
NI	Lands with Wilderness Characteristics	Subject to WO-IM 2011-154 and in accordance with BLM policy, the proposed project area contains units (CON-010-013, 14, 18, 19, 20, 24, 25, 28) meeting the minimum size requirements for inventory finding of the presence of lands with wilderness characteristics. However, the proposed action is appropriate and consistent with applicable requirements of law and other resource management considerations.	GMR	4/7/16
PI	Native American Concerns	See Section 3.4.2 for further analysis.	BSN	5/9/16
NI	Paleontological Resources	Neither alternative would impact paleontological resources.	JAM	4/19/16
NI	Social And Economic Conditions	There would not be any change to local social or economic conditions under any of the alternatives.	LM	4/25/16
NI	Visual Resources	The proposed action is located in a VRM Class III area where moderate change to the characteristic landscape would be allowed as long as the existing characteristics of the landscape are partially retained. Visual Resource Inventory is Low based on Scenic Quality Rating of C and Sensitivity Level Rating of Low. No impacts to visual resources would be anticipated for all alternatives.	GMR	4/7/16
Resource Uses				
NI	Access and Transportation	Neither of the alternatives would affect travel and transportation needs. Personnel would be limited to existing or designated roads only during darting exercises and roundups.	DJA	5/2/16
NI	Fire Management	Neither alternative would affect fire management on the allotment.	KLM	07/15/16
NP	Forest Management	There are no forest resources present on the allotment.	KLM	07/15/16
PI	Livestock Operations	See detailed analysis in section 3.5.1.	JHS	07/15/16
NP	Prime and Unique Farmlands	No prime and unique farmlands are found in the allotment.	EJS	7/14/16
NI	Realty Authorizations, Land Tenure	All alternatives would have no impact to existing realty authorizations. There are no proposed changes to land tenure in the project area.	LM	4/25/16
NI	Recreation	Neither of the alternatives analyzed would impact recreational values or needs. The WHMA is a popular recreation destination. Some type of heard management must be met to maintain the recreational integrity of	DJA	5/2/16

Determination ¹	Resource	Resource Issue/ Rationale for Determination	Specialist Initials	Date
		the WHMA.		
Special Designations				
NP	Areas of Critical Environmental Concern	There are no ACECs within or in close proximity to the proposed project area.	GMR	4/7/16
NP	Wild and Scenic Rivers	There are no WSRs within or in close proximity to the proposed project area.	GMR	4/7/16
NP	Wilderness Study Areas	There are no WSAs within or in close proximity to the proposed project area.	GMR	4/7/16

¹ NP = Not present in the area impacted by the Proposed Action or Alternatives. NI = Present, but not affected to a degree that detailed analysis is required. PI = Present with potential for impact analyzed in detail in the EA.

3.2 PHYSICAL RESOURCES

3.2.1 Soils

Affected Environment: Soils in the Sand Wash Basin have been derived from the Bridger Formation, which is comprised of sandstone, claystone and conglomerate. This was deposited during the late Eocene in large inland lakes, which were saline. Consequentially, the surface soils are generally fine sandy loams with clay loam to sand subsoils. The soils are moderately to strongly alkaline, generally very slightly saline and mostly shallow to moderately deep. Available water holding capacity of the soils is generally low to very low.

Environmental Consequences, Proposed Action and Alternative B: Implementation of both the Proposed Action and Alternative B would slow the rate of increase in wild horse numbers in the Sand Wash Basin HMA. Reduced concentrations of wild horses would contribute to reducing soil erosion. This reduction would be most notable and important in the vicinity of small spring meadows currently with high levels of disturbance and bare ground. The trapping operations would primarily be limited to existing roads, washes and horse trail areas, and only relatively small areas would be used for trapping and holding operations. Horses may be concentrated for a limited period of time in traps. Traps placed on upland areas may result in some new soil disturbance and compaction, but these impacts would be temporary and would not be expected to adversely affect soil quality in the long term. Soil quality may improve in the long term since physical impacts from wild horse use above AML would decrease due to the proposed gather.

Environmental Consequences, No Action: Doing nothing to slow the population rate increase would lead to soil loss from wind and water erosion, and invasion of undesired plant species as a result of over-utilization of vegetation, loss of perennial native grasses and heavy trailing. This loss would be most notable in the vicinity of small spring meadows and other water sources with high levels of wild horse use.

3.2.2 Water Quality, Surface

Affected Environment: Runoff water drainage from the Sand Wash Basin HMA flows to ephemeral draws that are tributaries of Sand Wash, which is an ephemeral tributary of the Little

Snake River. The water quality of the Little Snake River needs to support Aquatic Life Warm 2, Recreation 1a and Agriculture. The tributaries of this segment of the Little Snake River need to support Aquatic Life Cold 2, Recreation 2 and Agriculture; the tributaries are designated as use protected. An assessment conducted in February 2002 found that the Little Snake River was fully supporting Aquatic Life Warm 2 and Agriculture, but it was not assessed for Recreation 1a (primary contact). Tributary streams have not been assessed for attainment status, but are not suspected of any impairment.

Environmental Consequences, Proposed Action and Alternative B: Both action alternatives of controlling the growth rate of wild horses in the Sand Wash Basin HMA would be considered to be a Best Management Practice that would reduce contributions of non-point pollutants to surface waters. The carrying capacity of the affected area is sufficient to support the population objectives, however it must still be balanced with the other grazing animals the HMA supports to ensure that sufficient forage exists to maintain or improve the current conditions and meet Land Health Standards. The fertility control plan for the wild horse herd would have positive effects on water quality.

Environmental Consequences, No Action: Increasing degradation to water quality would occur as the wild horse population increase each year that any action to control numbers is postponed. Water quality would remain in a degraded state on heavily grazed spring sources due to removal of standing crop, compaction, and deposition of manure leading to increased disturbance and levels of bare grounds. The increasing population of wild horses would exacerbate use on existing limited waters and compound impacts described here.

3.3 BIOLOGICAL RESOURCES

3.3.1 Invasive/Non-Native Species

Affected Environment: Invasive and noxious weeds are present throughout the Little Snake River Field Office management area. Invasive annuals such as downy brome (cheatgrass) and purple mustard, and yellow alyssum are common, occupying disturbed areas. Invasive annual weeds are typically established on disturbed and high traffic areas whereas biennial and perennial noxious weeds are less common in occurrence. Many species on the Colorado noxious weed lists are present in the target project area, the most common of which include halogeton, downy brome, and salt cedar. Other noxious weeds present within the Sand Wash Basin HMA include hoary cress (whitetop), Canada thistle, several biennial thistles, and perennial pepperweed.

Halogeton is the most widespread weed throughout the HMA. Substantial infestations of this weed are common along roadsides and in areas of soil disturbance. Additionally, heavily utilized areas grazed by wild horses, wildlife, and livestock show a higher presence of halogeton. This noxious weed is also a poisonous oxalate and, when consumed as a percentage of the total forage diet, can be acutely toxic to horses, sheep, and cattle. Over time, horses may also develop chronic calcium deficiency if regular, small quantities of oxalates are consumed.

The BLM cooperates with the Moffat County Cooperative Weed Management program to employ the principals of Integrated Pest Management to control noxious weeds on public lands.

Environmental Consequences, Proposed Action and Alternative B: The injection of the wild horses with PZP would have no direct effect to current invasive species populations within the Sand Wash Basin HMA. Construction of bait traps may spread existing noxious or invasive weed species. This could occur if vehicles drive through weed infestations and spread seed into previously weed-free areas or arrive in the project area already carrying seeds attached to the vehicle or equipment. The BLM together with the SWAT volunteers and any other people involved, would examine proposed bait trapping sites prior to construction of the trap. If noxious weeds are found, the location of the facilities would be moved. All gather sites, holding facilities, and camping areas on public lands would be monitored for weeds during the next several years. Despite short-term risks, over the long term, the reduction in wild horse numbers and the subsequent recovery of the native vegetation would result in fewer disturbed sites that would be susceptible to invasion by non-native plant species.

Environmental Consequences, No Action: Not administering PZP to wild horses in the Sand Wash Basin HMA would eliminate the benefit of controlling increasing population levels. As the number of wild horses grazing on the range increases, the utilization levels would also increase creating a niche for invasive species, especially halogeton, to become established. These invasive species would begin to replace native vegetation throughout the plant community reducing forage production, soil stability and the overall value of the plant communities. If halogeton became a higher percentage of the total forage available, the wild horses, wildlife, and livestock would be more likely to consume this poisonous plant. Consequently, the No Action Alternative would have a negative impact on both the plant community and potentially the health of the wild horse herd.

3.3.2 Wildlife, Special Status Species and Migratory Birds

Affected Environment: The mosaic of plant communities and topographical features found in Sandwash support a wide variety of wildlife species. Native plant communities in the HMA are comprised primarily of sagebrush stands, salt desert shrublands and pinyon/juniper woodlands. These plant communities provide habitat for big game, small mammals, birds and reptiles. The HMA provides year round habitat for mule deer, elk and pronghorn including severe winter range for all three species. Coyotes, bobcats, jackrabbits, cottontail rabbits and a variety of small rodents are common in Sandwash.

Important bird species associated with shrubland habitats in the HMA include: Brewer's sparrow, sage sparrow, sage thrasher and loggerhead shrike. Juniper titmouse and pinyon jays utilize pinyon/juniper woodlands. Raptor species are tied to several different habitat types with in Sandwash Basin. Sagebrush and other shrublands provide open spaces for hunting, while rocky outcrops, woodlands and sporadic trees provide nesting substrates. There are several known raptor nests located in the HMA. Seven BLM sensitive species are known to inhabit the HMA, including greater sage-grouse, Brewer's sparrow, golden eagle, bald eagle, burrowing owl, ferruginous hawk and white-tailed prairie dog.

Greater sage-grouse: Sage-grouse are considered a sagebrush ecosystem obligate species. Sagebrush provides nesting, brooding and winter cover, as well as forage throughout the year. Each year, male sage-grouse congregate in late winter through spring on leks to display their breeding plumage and to attract hens for mating. Typically, leks are positioned within proximity of nesting and brood-rearing habitat; therefore, they are often considered an excellent reference point for monitoring and habitat protection measures. Sagebrush and grass cover are important components of sage-grouse habitat for both nest and young concealment. Availability of forbs and insects are crucial for the brood-rearing season.

Greater sage-grouse utilize sagebrush ecosystems within the Sandwash year round. There are eight active leks located within the HMA. In 2016, these eight leks had a combined high male count of 349 birds (CPW 2016). The largest lek in Sandwash is the Twin Buttes lek, which had over 100 males this year. A Priority Habitat Management Area (PHMA) spans the central to north and east areas of the HMA and consists of approximately 93,000 acres. PHMA is defined as areas that have been identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations. The remaining southern and western edges of the HMA are mapped as General Habitat Management Areas (GHMA).

Brewer's sparrow: Brewer's sparrows are a summer resident in Colorado and nest in sagebrush stands. Nests are constructed in sagebrush and other shrubs in denser patches of shrubs. This species would likely be nesting in the north and east portions of Sandwash mid-May through mid-July.

Golden eagle: Golden eagles can be found in the HMA year round. There are several documented nests in the area, primarily along rocky outcrops. Upland habitats are used for hunting and during winter months, scavenging on winter killed big game species.

Bald eagle: Bald eagles are known to winter and nest along portions of the Little Snake River. No bald eagle nests are located within the HMA. Upland habitats adjacent to the river are used as scavenging areas primarily for winter killed big game species.

Burrowing owl: Burrowing owls are found in short grass prairie and shrubland habitats. This species nests in rodent burrows, and it is often associated with prairie dog colonies. There are several documented burrowing owl nests in the HMA.

Ferruginous hawk: Ferruginous hawk habitat consists of both grassland and shrubland ecosystems. These hawks commonly nest in trees or similar elevated structures and have been recorded to nest on the ground on hilltops or rock outcrops. Primary prey consists of small mammals, such as rabbits, prairie dogs, and ground squirrels. There are several documented ferruginous hawk nests in the HMA.

White-tailed prairie dog: Prairie dog colonies can be found scattered though out the HMA. This small mammal lives in ground burrows and these burrows provide habitat for many other species of wildlife, including snakes, lizards and various other small mammals.

Environmental Consequences, Proposed Action and Alternative B:

The methods and actual application of fertility control would have little to no impact on wildlife, BLM sensitive species or habitat for these species. Wildlife may be temporarily displaced during trap set-up, due to noise and an increase in human presence. Some disruption impacts may also occur in the spring if bait traps were set up near sage-grouse leks or raptor nests. To ensure these impacts do not occur, sage-grouse leks and raptor nest should be avoided during this critical time.

If successful, the Proposed Action and Alternative B would limit herd growth and would be beneficial to wildlife and sensitive species habitat. Wildlife would still be competing with wild horses within the HMA for available forage, space and water resources as the horse numbers would remain far above AML. During periods of drought and lower forage production, competition for forage with wildlife species would increase. Wild horse diets primarily overlap with elk and other species that highly utilize grasses. However, horses may also eat shrubs, especially saltbrush, and may impact winter browse for mule deer and pronghorn. As wild horse populations increase in the mid and long-term, competition for forage, space and water may lead to displacement of wildlife species, particularly big game, which may result in the use of less preferred habitat, lower animal condition, and lower capability to survive harsh winters.

Grazing by wild horses can reduce habitat effectiveness by changing structure, composition, or diversity of vegetation. Since horse diets consist primarily of grass, and horses can clip vegetation close to the ground, year-round grazing by wild horses can remove important cover for nest concealment of ground nesting birds. This could lead to increased predation of greater sage-grouse nests and young, if habitat were to lack hiding cover (Connelly et al. 1991; Schroeder and Baydack 2001). Horses can also reduce or fragment shrub canopy by trampling, rubbing, and consuming it (Beever and Aldridge 2011). Beever et al. (2008) conducted a study of vegetation response to removing horses in 1997 and 1998 and concluded that sites from which horses had been removed exhibited 1.1 to 1.9 times greater shrub cover, 1.2 to 1.5 times greater total plant cover, 2 to 12 greater plant species richness, 1.9 to 2.9 times greater native grass cover, and 1.1 to 2.4 times greater frequency of native grasses than did horse-occupied sites. Loss of grass and shrub cover reduces the quality of seasonal habitats for many species, including sage-grouse. Horses may also congregate in wet areas (wetlands/riparian areas), especially during the hot months. This may degrade important brood-rearing areas, which are vital to survival of sage-grouse chicks (Beever and Aldridge 2011). If overgrazing does occur, weed infestations would also increase, further reducing habitat quality for wildlife species. Overall, large increases in herd size would degrade important habitats for wildlife and BLM sensitive species.

Environmental Consequences, No Action: As described above, an increase in horse numbers would lead to additional habitat degradation, thus adversely impacting several wildlife and BLM sensitive species. This alternative has the potential to have severe negative impacts to native wildlife species that rely on habitat in the HMA. In addition, the No Action alternative would not be in conformance with the Greater sage-grouse ARMPA for managing important greater sage-grouse habitats.

3.3.3 Upland Vegetation

Affected Environment: Upland vegetation within the HMA is dominated by sagebrush-grass and salt desert shrub plant communities. The two communities are intermixed and form a complex of range sites with saltbush dominating on the clayey sites and sagebrush dominating on the loamy sites. There is also a small amount of juniper woodland in the northerly and westerly portions of the HMA. Dominant shrub species include Wyoming big sagebrush, shadscale, Nuttall's saltbush, winterfat, green rabbitbrush, budsage, basin big sagebrush, greasewood, and gray horsebrush. Dominant grass species include needleandthread, Indian ricegrass, bottlebrush squirreltail, Sandberg bluegrass, western wheatgrass, bluebunch wheatgrass, and prairie junegrass. Dominant forbs include stemless goldenweed, buckwheat, *Penstemon* spp., *Astragalus* spp., *Lupinus* spp., Hood's phlox, and arrowleaf balsamroot. Cheatgrass and halogeton are present in varying levels throughout the HMA. Vegetation density and productivity increase towards the northerly end of the HMA due to increasing elevation and precipitation. For more information about horse use on vegetation and associated utilization levels see Appendix G.

Environmental Consequences, Proposed Action: The methods and actual application of fertility control would have no impact to upland vegetation. The objectives and potential results of a 50% reduction in foaling rates would have beneficial impacts to upland vegetation. Currently horses, wildlife, and domestic livestock (primarily sheep) utilize upland vegetation forage. Wildlife is small in numbers and migratory in nature, and while relying on vegetation within the HMA for sustenance are by far the least impact to upland vegetation. Domestic livestock use within the HMA is seasonal (primarily fall, winter, early spring) and is regulated to maintain forage levels to sustain vegetation composition, diversity, and vigor as well as provide forage for horses and wildlife. Horse use in the HMA is year round and unregulated in the season of use and areas that are being used. The management tools available to manage horse use in the HMA is to limit access to water sources, fertility control and other, more direct, population control methods such as gathers. Horse use in the HMA is by far the most significant impact to upland vegetation within the HMA due to yearlong use. In 2014, the LSFO conducted utilization inventories within the HMA. Horse numbers have increased since these inventories were completed. The result of these inventories showed that the majority of the HMA was experiencing 21%-40% use before livestock or seasonal wildlife use occurred on the HMA. For further information on these inventory techniques and results refer to Appendix G.

The Proposed Action and Alternative B could have an impact on vegetative resources around the bait/water trapping areas. The impacts would include trampling of vegetation by wild horses at the trap sites; crushing of vegetation by vehicles and vegetation disturbance from the temporary corrals and holding facilities. These disturbed areas would make up less than one acre per location. Gather corrals and holding facility locations are usually placed in areas easily accessible to livestock trailers and equipment. Use of existing roads, gravel pits or other previously disturbed sites may also be an option. No new roads would be created. These likely impacts are temporary and vegetation would be expected to recover.

Environmental Consequences, No Action: This alternative would have adverse impacts to upland vegetation as year round horse utilization and associated vegetation impacts would increase with the increase in herd size. This would not only have adverse impacts to vegetation but to the other managed multiple uses that rely on upland vegetation for forage and

sustainability. And if left unchecked, increased horse numbers within the HMA and the potential for vegetation use that causes degradation of upland vegetation would have adverse impacts to the quantity and nutritional value of forage available for the horse themselves.

3.3.4 Wetlands and Riparian Zones

Affected Environment: Some isolated and discontinuous riparian systems are present in the affected area. These resources are usually associated with springs and seeps and would be largely dependent on alluvial and ground waters to maintain these limited resources. Not all of the riparian systems within the affected area have been formally documented, but there are segments along Sand Wash, South Sand Wash, and Yellow Cat Wash that have streambanks lined with baltic rush and point-bars having coyote willow or associated flood plains with inland saltgrass. A few of the stream segments along Sand Wash have baltic rush on one streambank and rabbitbrush-wheatgrass on the opposite streambank. These occur below the confluences of Yellow Cat Wash and Dugout Draw.

Lotic riparian zones are limited to the southeast portion of the HMA that follows the Little Snake River. Several short reaches of the Little Snake River are along the HMA boundary. At the time of the last assessment, these reaches were classified as functioning at risk.

Environmental Consequences, Proposed Action: Impacts to wetlands and riparian vegetation are similar to those described for upland vegetation. Every effort would be made to avoid constructing water traps at naturally occurring water sources, such as seeps and springs and instead utilize man-made stockponds. The methods and actual application of fertility control would have no impact to the wetlands/riparian areas. The objectives and potential results reduction in foaling rates would have beneficial impacts to wetlands and riparian areas. Currently horses, wildlife, and domestic livestock (primarily sheep) utilize these areas for water and forage.

Environmental Consequences, No Action: This alternative would have adverse impacts to wetlands and riparian areas as year round horse utilization and associated vegetation impacts would increase with the increase in herd size. There are very few natural water sources within the HMA; over the decades of livestock operations in the Sand Wash Basin, many artificial water sources have been created for livestock use. Wild horses have come to depend on these stock ponds, moving from one area to the next as the water dries up. In years of below average precipitation, most of the ponds dry up and horses must then concentrate around the natural springs and the three water sources associated with solar well pumps. Several hundred horses using between one and three water source results in extreme trampling and overuse of riparian vegetation and results in overall degradation of the wetlands.

3.3.6 Wild Horses

Affected Environment: The earliest BLM wild horse census took place in 1971 and was completed using a fixed-wing aircraft. The flight documented 65 wild horses. Since 1971 herd numbers have risen as high as 418 in 1988, and 455 horses in 1995. BLM has completed seven (7) capture operations between 1988 and 2008 with a total of 1,396 horses removed from the

herd. There are currently 568 wild horses in the HMA and there could be as many as 659 total animals after the 2016 foaling rate ($568 \times 16\% = 91$ new foals).

Wild and domestic ungulates rely on browse plant species for much of their nutritional needs during the winter months. While the majority of shrub species contain high levels of protein in their twig tips and leaves, Nuttall's saltbush is the most palatable of the browse plants and so is often the most heavily impacted by grazing animals. During mild winters or winters with below average or average snow accumulation, key islands of localized saltbush communities can receive high utilization from the various users. During harsh winters and periods of high snow accumulation, Wyoming big sagebrush and salt desert shrub species receive the highest use. The heaviest competition between all range users occurs during the early spring when increased dietary needs associated with birthing and breeding are further increased by low body fat reserves, and low nutritional content of plant species in the early spring. During the spring and summer, wild horse diets consist primarily of native perennial grasses such as Indian ricegrass, bottlebrush squirreltail, western wheatgrass and needleandthread grass.

While the majority of the HMA boundary is fenced, horses in the Sand Wash Basin herd roam freely through their range with no internal fencing or impassible topographic features to limit their movements. Fewer horses concentrate in the south, southwest and western portion of the HMA regardless of the time of year. This is the result of several factors including seasonal recreational traffic, lack of perennial water sources, saline water (less palatable), and home range preference. The southern and southwestern HMA boundary adjoins the West Boone Draw Allotment which is permitted for domestic horses between December and May of each year.

The HMA boundary has numerous wire and metal gates. In the early spring, and extending through July, the southern and southeastern HMA has been experiencing an increase in recreational off-highway vehicle use. During archery and rifle season, between August and mid-October, the HMA is popular with big game hunters. Historically there has been exploration drilling for oil and gas and there is potential for future lease development. The increases in human traffic and activity has increased the incidence of gates left open and consequently the number of wild horses that leave the HMA, as well as occasional incidents where domestic horses relocate inside the HMA.

Horses, livestock and wildlife in the HMA rely on a combination of developed water wells, undeveloped springs and seeps and water reservoirs. Reservoirs are the primary source of water for all users and are widely dispersed through the HMA. In years when the HMA experiences below average precipitation, the majority of ponds dry up between July and whenever measurable precipitation accumulates in the fall.

Environmental Consequences, Proposed Action and Alternative B:

Fertility control would be applied to approximately 80% of the mares of reproductive age within the Sand Wash Basin HMA, if possible, to decrease fertility and future annual wild horse population growth within the HMAs. The detailed procedures to be followed for the implementation of fertility control are described in Appendix B. Each mare would receive a single dose of Zonastat-H (native PZP) contraceptive vaccine. When injected, PZP (antigen) causes the mare's immune system to produce antibodies and these antibodies bind to the mare's

eggs, which effectively blocks sperm binding and fertilization (ZooMontana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and to the environment, and can be administered in the field. Additionally, PZP contraception appears to be completely reversible in most treated mares. Individual mare response to PZP varies, from no impact to fertility to taking several years to return to fertility. However, most mares fertility is reduced for one year and returns to fertility the following year if left untreated.

The highest success for fertility control has been obtained when applied during the timeframe of November through February and vaccine is 90% effective. However, due to snowpack and or mud, it is normally impossible to get into the Sand Wash Basin HMA November through the end of March.

Administration of the vaccine does not affect normal development of a fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally during the first foaling season after PZP has been administered (assuming they are already pregnant). Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in 3 populations of wild horses, which is consistent with Powell's (1999) findings in another population. Likewise, body condition of PZP-treated and control mares did not differ between treatment groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of 4 wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior while contracepted (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002). Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (2010) found this infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown.

Nunez's 2010 research showed that a small number of mares that had been previously been treated with PZP foaled on the average 30 days later than untreated mares and expressed the concern that this late foaling may impact foal survivorship and decrease band stability. However, the paper provided no evidence of this happening.

Nunez (2010) also stated that not all populations will respond similarly to PZP treatment. Differences in habitat, resource availability, and demography among conspecific populations will undoubtedly affect their physiological and behavioral responses to PZP contraception, and need

to be considered. Kirkpatrick et al. (2010) conclude by stating that “*the larger question is, even if subtle alterations in behavior may occur, this is still far better than the alternative*” and that the “*other victory for horses is that every mare prevented from being removed, by virtue of contraception, is a mare that will only be delaying her reproduction rather than being eliminated permanently from the range. This preserves herd genetics, while gathers and adoption do not.*”

There would be potential additional indirect impacts to animals at the isolated injection site following the administration of the fertility control vaccine. In general, the safety of PZP on horses has been well-established. Abscesses and reactions, in general, at the injection-site are extremely rare. Administration of the PZP vaccine would be done by trained and qualified personnel. Also in the administration of PZP, applicators would need to be able to approach horses to inside of 50 yards for accurate and reliable administration of the vaccine. This would require horses to become comfortable with human presence. This may lead to a loss of wild characteristic of horses in that they don't readily flee from human presence. However, wild horses do generally still flee when pressured or when startled (like when a dart projector is fired).

Under the Proposed Action and Alternative B, the BLM and SWAT would make every effort to return to the HMA every year to re-apply PZP and initiate new treatments in order to maintain its effectiveness in controlling population growth rates. PZP can safely be reapplied every year or as necessary to control the population growth rate. The probability of long-term infertility using PZP is low, and many mares retreated even after 3 years will return to normal. Even through repeated booster treatments of PZP, most if not all mares would return to fertility. Observations at Assateague Island National Seashore indicate that the more times a mare is consecutively treated, that there is an increased time before fertility returns, but that even mares treated 7 consecutive years have started ovulating again (Kirkpatrick, 2002). Since the PZP formulations do not act permanently, determinations would be made as to how long to consecutively treat mares once the population growth is controlled.

Should the booster treatment and repeated fertility control treatment with PZP or other formulation be continued into the future, the chronic cycle of over population and large gathers and removals would be greatly reduced, which would allow a consistent cycle of balance and stability, resulting in continued improvement of overall habitat conditions and animal health.

Environmental Consequences Specific to the Proposed Action: Impacts to individual animals could occur as a result of stress associated with the bait trapping procedure. After the gate is shut behind a band of horses, they could become nervous and agitated leading to some animals possibly running into the panels or attempting to jump out. This could lead to minor injuries such as scrapes and bruising, or major injuries such as broken legs or necks. Mortality of individual horses from these activities is rare but can occur. Most horses would recover from the stress associated with the gather in a short amount of time as low stress techniques would be utilized. Other impacts to individual wild horses include separation of members of individual bands and removal of animals from the population. Efforts would be made to keep the horses calm while enclosed in the trap; human presence near the trap would be kept to a minimum and all movements would be slow and quiet. Following all Standard Operating Procedures (SOPs) as outlined in Appendix A would reduce the chance of injury.

During transport, potential impacts to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Following all SOPs as outlined in Appendix A would reduce the chance of injury.

Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. A small percentage of animals can die during this transition; however, some of these animals are in such poor condition that it is unlikely they would have survived if left on the range.

During the preparation process, potential impacts to wild horses are similar to those that can occur during transport. Injury or mortality during the preparation process is low, but can occur.

Mortality at ORCs averages approximately 5% (GAO-09-77, Page 51), which includes animals euthanized due to a pre-existing conditions, animals in extremely poor conditions, animals that are injured and would not recover, animals that are unable to transition to feed; and animals that die accidentally during sorting, handling, or preparation.

Environmental Consequences, No Action: The population of the Sand Wash Basin herd would continue to grow at the national average rate of increase seen in the majority of HMAs of 20 to 25% per year. This unchecked growth would lead to a population size of 602 in Sand Wash Basin by 2015. Nationally, there is a shortage of both ORC and ORP space for wild horses that have been removed from the range. Until adequate holding space becomes available, removals are not being authorized. Without any type of population management, the Sand Wash Basin herd could be expected to exceed 1000 animals by 2018.

Implementation of this alternative would result in a high population growth rate and resultant high population levels would increase stresses on wild horses due to increased competition for resources, increased social interaction between harems, and increased migration to areas outside the HMA.

A population of over 500 head in the Sand Wash Basin HMA is unprecedented, therefore it is not known at what the population could grow to before serious impacts to soil stability, vegetation, water sources and wildlife habitat would occur. Wild horses would begin running out of forage and water, and would be in poor shape going into winter. At some point the population would crash, probably during an unusually cold or snowy winter, or during a year of drought. The other option that may happen is that horses would leave the HMA boundary in search of food and water resources. If horses left the HMA, then they would be listed for removal as soon as the next gather occurs.

Mitigation Measures: The Sand Wash Basin is a closely monitored herd. Application of the PZP vaccine would be carried out through the use of both trained volunteers and BLM personnel. After application, the herd would be closely monitored for such effects as out of season births, band instability and stallion infidelity. As stated above, PZP is reversible; therefore if these effects are noted and become significant, the population control using PZP could be halted.

3.4 HERITAGE RESOURCES AND HUMAN ENVIRONMENT

3.4.1 Cultural Resources

Federal agencies are mandated by various laws to consider the effect of proposed land use activities on cultural resources (i.e. historic and prehistoric sites). The National Historic Preservation Act (NHPA) requires federal agencies to take into account the effect of federal undertakings on cultural resources that are eligible for inclusion in the National Register of Historic Places (NRHP). Approval of the proposed wild horse gather is considered a federal undertaking under Section 106 of NHPA. In Colorado, the requirements of the NHPA are implemented under the terms of the Protocol Agreement between the Bureau of Land Management and the State Historic Preservation Officer. An undertaking may be authorized by a BLM field office if it is determined that there will be “no effect” or “no adverse effect” to eligible sites.

Affected Environment: Cultural resources within the Sand Wash Basin Herd Management Area are primarily prehistoric Native American sites located in open terrain. Included are sites that are classifiable as campsites, lithic scatters, and tool stone quarries. A number of these open prehistoric sites have been determined to be eligible to the National Register. Located in the semi-arid environment of the Sand Wash Basin, these sites commonly have flaked stone artifacts scattered on the ground surface. Often campsites have eroding hearths and other fire features exposed on the ground surface. Artifacts and fire features exposed on the ground surface are subject to being damaged from trampling by livestock, wild horses, and game animals.

Environmental Consequences, Proposed Action and Alternative B: The main concern to cultural resources from the proposed action is the potential for impact to prehistoric archaeological sites from ground surface disturbing activity associated with setup, operation, and removal of the traps. Most of the traps are to be set up at natural water sources where the potential for prehistoric sites is high. An intensive pedestrian cultural resource inventory must be completed at the locations of the proposed traps. If eligible sites or those in need of more information to determine eligibility (so-called “need data” sites) are found during the survey, set up and operation of the traps must avoid such sites with an adequate buffer zone in order to minimize or eliminate disturbance to the site from horse trampling during roundup operations.

The Proposed Action and Alternative B could result in a minor beneficial effect on archaeological sites by reducing the numbers of wild horses in the HMA. Lower numbers of wild horses should decrease potential damage to the surface manifestation of archaeological sites that results from trampling.

Environmental Consequences, No Action: The no-action alternative could be expected to result in a minor detrimental effect on cultural resources. Greater numbers of wild horses could increase potential damage to the surface manifestation of archaeological sites caused by trampling.

3.4.2 Native American Concerns

A number of laws direct federal land managing agencies to consider the views of Native Americans as part of the process of making land use decisions. Among these is Section 106 of the National Historic Preservation Act (NHPA) which requires federal agencies to consult with Native Americans regarding the effect of federal undertakings on sites that may be of cultural or religious importance to Indian people to ensure that tribal values are taken into account to the extent feasible.

The Little Snake Field Office of the BLM considers the concerns of the tribes that inhabited the field area in historic times, namely the Utes and the Shoshone. Sites of concern to the historic tribes usually include burials, rock art sites, possible vision quest sites, possible eagle trap sites, and sites with tipi rings and wickiups.

Affected Environment: The Sand Wash Basin Herd Management Area contains sites with wickiups and tipi rings. As a general statement, wild horses in the basin avoid juniper woodlands where wickiups are known and frequent open grasslands with sage and other kinds of shrubs where multiple sites with tipi ring sites have been recorded.

Environmental Consequences, Proposed Action and Alternative B: The Proposed Action and Alternative would serve to decrease wild horse numbers and therefore is expected to have a minor beneficial effect to sites of concern to Native Americans (e.g. tipi ring sites). Any disturbance to tipi rings and associated artifacts presently occurring from animal trampling would be expected to decrease with lowered numbers of horses.

Environmental Consequences, No Action: A no-action alternative would allow the horse population to increase and this would be expected to have a minor detrimental effect on tipi ring sites. Disturbance to tipi rings and associated artifacts that might be presently occurring from animal trampling would be expected to increase with a larger population of horses.

3.4.3 Waste, Hazardous and Solid

Affected Environment: The Resource Conservation and Recovery Act (RCRA) of 1976 established a comprehensive program for managing hazardous wastes from the time they are produced until their disposal. U.S. Environmental Protection Agency (EPA) regulations define solid wastes as any “discarded materials” subject to a number of exclusions. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980 regulates mitigation of the release of hazardous substances (spillage, leaking, dumping, accumulation, etc.) or threat of a release of hazardous substances into the environment. Civil and criminal penalties may be imposed if the hazardous waste is not managed in a safe manner and according to regulations. The Colorado Department of Public Health & Environment (CDPHE) administers hazardous waste regulations for oil and gas activities in Colorado

Environmental Consequences, Proposed Action: The proposed action would generate syringes, darts, needles, vaccine containers, etc. used in the administration of the immunocontraceptive vaccine and is considered regulated medical waste. Regulated medical waste must be placed in leak proof containers that are contained in a red plastic bag labeled medical waste. Medical waste must be handled and transported separately from other waste to an approved disposal

facility. The amount of regulated medical waste that would be generated by this project would be minimal and not result in any threat to the environment.

Environmental Consequences, No Action: There would be no hazardous waste generated from the No Action Alternative.

3.5 RESOURCE USES

3.5.1 Livestock Operations

Affected Environment: The HMA contains all or part of four grazing allotments. The allotments and their permitted use and special terms and conditions relevant to the HMA are as follows:

Allotment Name & Number	Livestock Number & Kind	Dates Begin End		%PL	AUMs
Sand Wash #04219	5,550 Sheep	11/15	5/15	96	6,377

Allotment Name & Number	Livestock Number & Kind	Dates Begin End		%PL	AUMs
Shepherd Spring #04217	5,435 Sheep	10/1	5/5	98	7,599
	803 Sheep	4/1	6/30	98	471
	254 Cattle	9/1	10/31	98	499
	137 Cattle	10/1	1/15	98	472
Lang Spring #04212	257 Sheep	9/1	5/5	87	363

and 8,100 AUMs.

Allotment Name & Number	Livestock Number & Kind	Dates Begin End		%PL	AUMs
Nipple Rim #04213	2,899 Sheep	10/20	5/20	98	3,977

The above permits represent the maximum amount of forage allocated for livestock and the maximum periods of allowable use. While cattle are permitted on the Shepherd Springs #04217 and Sand Wash #04219 Allotments, cattle have not customarily grazed pastures within the HMA since at least 2001.

Environmental Consequences, Proposed Action: The activities related to darting mares, including logistical support and follow-up monitoring would not conflict with livestock management activities within the HMA. The fall and spring, when the darting is proposed to occur, is the most likely time that sheep, herders, and associated activities could be present. Existing darting activities have not proven disruptive to permitted grazing activities in the past and nothing is being proposed that would change this.

Reducing wild horse fecundity through PZP treatments would aid in the continued multiple-use management of the allotments within the HMA. Within grazing allotments, the number and

timing of livestock are controlled in a manner that is intended to meet resource objectives. Within the HMA, one of these objectives is to graze livestock in a manner that will be compatible with the long-term sustainability of a forage base that must support year-long use by horses and wildlife. Livestock management assumes that the horse and wild ungulate populations are being managed at established population levels that are also commensurate with the carrying capacity of the rangeland resource. The proposed PZP treatments would aid in managing horse herd size within the context of multiple use.

Environmental Consequences, No Action: This alternative would have no direct conflict with grazing operations because no additional human activity related to PZP administration would occur. Not taking action to control horse fecundity through PZP administration would allow further unrestricted reproduction of horses within the HMA. This would put increasing pressure on the plant community to produce forage for a single species, with livestock and wildlife having a diminished share of available food and cover. Livestock management that is implemented in a manner to share the forage base with horses and other animals, while ensuring the sustainability of the forage resource, would be increasingly rendered ineffective in maintaining rangeland health standards.

3.6 CUMULATIVE IMPACTS

The NEPA regulations define cumulative impacts as impacts on the environment that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

For the purposes of analyzing cumulative impacts on all affected resources within the assessment area, the following list describes the past, present, and reasonably foreseeable relevant actions within the Sand Wash Basin HMA. The Cumulative Assessment Area (CAA) for the purpose of evaluating the combined cumulative impacts is the Sand Wash Basin HMA boundary for all resources and uses.

3.6.1 Past and Present Actions

Domestic livestock grazing has occurred across northwest Colorado, including Sand Wash Basin, for over 125 years. Initially cattle were turned out in the area to take advantage of vast stands of native bunchgrasses. Cattle grazing had a profound impact on native vegetation in areas within a few miles of existing water sources, primarily springs. Starting in the early 1900's sheep grazing, primarily by itinerant herders, took place in addition to the ongoing cattle grazing. Sheep were herded to areas outside the areas heavily grazed by cattle, primarily during the winter and spring months. At times dozens of sheep bands covered the landscape. Grazing began to decrease during the droughts associated with the Dust Bowl Era and the advent of the Taylor Grazing Act, which favored cattle users with established ranches over sheep herders without ranch property.

Since the advent of the Taylor Grazing Act (TGA) in 1934, levels of livestock grazing throughout northwest Colorado have decreased dramatically. Prior to the TGA, livestock grazing

was uncontrolled, so exact levels of grazing are unknown. Records in the years immediately following passage of the TGA make no mention of the presence of horses in Sand Wash Basin, but instead speak to the lack of usable water as the primary limiting factor for livestock use. To address this, numerous water sources were developed throughout the 1940's through the 1960's by ranchers and the BLM including wells, spring developments, and small impoundments within ephemeral drainages. It was the development of these water sources that allowed for more extensive livestock use and made it possible for horses to remain in the basin year-long.

Livestock grazing continues to be authorized under the provisions of the TGA in four allotments that are within the Sand Wash Basin HMA. Permitted seasons of use are generally during the dormant period for forage species and into the early growing season. Adjustments in livestock management over the last ten to fifteen years, such as alternating areas of use during the growing season and changes in the frequency, duration, and intensity of grazing on native grasses, forbs, and browse with respect to horse use, have modified the management of livestock grazing within the HMA to account for the additional forage needs and year-round nature of the grazing impacts on cold desert and sagebrush steppe by horses.

Domestic horses also used the public lands for grazing to supply local, regional and national demand for working animals. Demand for horses decreased during the period prior to World War II as motor vehicles replaced horses for both civilian and military uses. The present horse populations are largely the remnants of these historic horse operations. After World War II, horses were periodically gathered by local landowners and ranchers and sold for horse meat, when commodity prices were high enough for this to be profitable, up until 1971 when the Wild Free-roaming Horse and Burro Act was enacted.

Wild horse use has occurred in Sand Wash Basin since the passage of the WFRHBA of 1971. In years that the populations of wild horses have exceeded the established AML range, disturbance to uplands and riparian/wetland sites has occurred in some areas (See Appendix G for the latest results on vegetation). Between 1988 and the present, the BLM has conducted approximately seven (7) gathers of wild horses within the Sand Wash Basin HMA in order to remove excess animals to manage the population size within the established AML range. Approximately 1,396 excess animals were removed and have been transported to ORC facilities, where they were prepared for adoption, sale (with limitations), ORP, or other statutorily authorized disposition.

The BLM has conducted Integrated Weed Management for the past 20 years to monitor and treat infestations of noxious weeds and invasive species.

Recreation use has occurred in the form of off-road ATV, UTV and motorcycle use. The southern portion of the HMA has been designated as an "open" play area for this type of recreation.

Oil and gas exploration activities have occurred throughout the HMA. There are currently no producing wells and ~40 plugged and abandoned wells.

3.6.2 Reasonably Foreseeable Future Actions

Livestock grazing is expected to continue on the four allotments within the HMA at roughly the same stocking levels and seasons of use as currently permitted. Periodic assessments of livestock grazing in relation to Land Health Standards are likely to result in minor changes in livestock management practices or the installation of range improvements.

Wild horses will continue to be found and thrive within the HMA. Gathers and removal will be expected to occur in order to manage the population within or near the designated AML. Resource monitoring information will be used to assess the AML, and potentially adjust it.

Inventory efforts to identify new infestations of noxious weeds will continue and the BLM will provide treatment of identified infestations.

Recreation use will continue at approximately the same or increased levels as presently occur.

Oil and gas leasing and exploration will continue.

The TransWest Express and Energy Gateway South Transmission lines will be constructed on the eastern boundary of the HMA.

Sage grouse management will intensify and could result in a lowering of both livestock and wild horse grazing within the HMA.

CHAPTER 4— PUBLIC LAND HEALTH STANDARDS

4 Introduction

All landscapes within the LSFO have been assessed for compliance with the Colorado Standards of Public Land Health by an interdisciplinary teams consisting of various resource specialists typically including range specialists, wildlife biologists, and one soil/water/air specialists between 1998 and 2007.

4.1 Colorado Public Land Health Standards

In January 1997, the Colorado State Office of the BLM approved the Standards for Public Land Health and amended all RMPs in the State. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands.

4.1.1 Standard 1

Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes.

The upland soils standard should continue to be met under the Proposed Action Alternative. In the current non-drought conditions, the forage resource is sufficient to support the wild horse herd in the basin, and provide the needed cover for upland soils. In the absence of moderate drought of 1-2 years, upland soils would continue to have diverse plant communities for upland soil health. However, for this standard to continue to be met the wild horse herd population objectives must be achieved as described above in Sections 1.2-1.3.

The No Action Alternative would allow the wild horse population to increase beyond the forage allocated to the wild horse herd. Increased allocations of forage would be required for the horse herds and subtracted from livestock and wildlife allocations. Eventually, the horse herds could increase beyond the total forage capability of the HMA, but grazing dominated by the wild horses would likely reveal grazing distribution problems much sooner. Areas of depleted perennial grass cover would increase in size and be replaced with cheatgrass and other annual weeds. Increased erosion of the upland soil resource would occur in these areas over time as the conversion to plants that are less capable of protecting soils proceeds. Eventually upland soil health will be diminished over large areas within the Sand Wash Basin. The No Action Alternative would not meet this standard.

4.1.2 Standard 2

Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods.

Operations associated with the Proposed Action would not impact riparian systems. The Proposed Action would help control horse numbers, which in turn would help in avoiding over utilization of riparian resources throughout the HMA. Under the Proposed Action this standard would be met throughout the HMA.

The No Action Alternative would allow the wild horse population to continue to increase to levels greatly above AML. Extremely large numbers of horses would be concentrated around a limited number of seeps and springs in the HMA which would lead to soil compaction, bank trampling, increased erosion, and over-utilization of riparian plants. Due to these effects, this standard would not continue to be met under the No Action Alternative.

4.1.3 Standard 3

Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential.

Sagebrush stands and pinyon/juniper woodlands in the HMA are in varying seral stages, with some areas meeting this standard and some areas failing this standard. Reasons for failure include: weed infestations, lack of perennial grasses and forbs and older, decedent stands, resulting in higher than desired canopy cover.

The Proposed Action would not preclude this standard from being met. Areas that are currently meeting this standard would likely continue to meet the standard and vegetative condition may improve with control of the horse population.

Under the No Action Alternative, as horse numbers increase, over utilization would likely occur, thus moving the HMA towards failing this standard.

4.1.4 Standard 4

Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Sagebrush stands and pinyon/juniper woodlands in the HMA are in varying seral stages, with some areas meeting this standard and some areas failing this standard. Reasons for failure include: weed infestations, lack of perennial grasses and forbs and older, decedent stands, resulting in higher than desired canopy cover.

The Proposed Action would not preclude this standard from being met. Areas that are currently meeting this standard would likely continue to meet the standard and vegetative condition may improve with control of the horse population.

As horse numbers increase, over utilization would likely occur, thus moving the HMA towards failing this standard.

4.1.5 Standard 5

The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado.

The water quality standard is met under either alternative. All stream segments are supporting the classified uses and no stream segments are considered to be impaired. Limiting the number of horses under each of the alternatives would enhance the management of all grazing animals in the basin and utilization of the limited forage resources. The management of the wild horse herd and gathering operations to remove excess horses are considered to be Best Management Practices, which would help to maintain forage and plant cover, ultimately controlling or reducing the amount of sediment in runoff waters. Any fertility control that results would reduce the rate of herd growth and should also promote healthier plant communities, stable soils and less sediment in runoff waters.

The No Action Alternative would allow the wild horse population to continue to increase until natural herd regulating forces (e.g., disease, starvation, and dehydration) reduce the population. This alternative would allow degradation of upland, floodplain and riparian resources to occur. It would be anticipated that accelerated erosion caused by the increasing horse population would increase sediment, nutrients and other non-point source pollutants delivered to the Little Snake River from the Sand Wash Basin. Water quality of the Little Snake River may still continue to support the classified uses, but if non-point source contamination becomes a substantial contribution from Sand Wash, it is likely that the water quality of this ephemeral tributary of the river would fail to support its classified uses and eventually be listed as impaired. The No Action Alternative would not meet this standard.

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8.2 Acronyms

AML- Appropriate management level

BLM-Bureau of Land Management

CFR-Code of Federal Regulations

DR-Decision Record

EA-Environmental Assessment

EIS-Environmental Impact Statement

FLPMA-Federal Land Policy and Management Act

FONSI-Finding of No Significant Impact

HA – Herd Area

HMA – Herd Management Area

ID-Interdisciplinary

IM-Instructional Memorandum

NEPA-National Environmental Policy Act

RFS-Reasonably Foreseeable Future Action

RMP-Resource Management Plan

ORP – Off Range Pasture

ORC – Off Range Corral

PZP- Porcine Zona Pellucida

SIGNATURE OF PREPARER:

SIGNATURE OF ENVIRONMENTAL REVIEWER:

DATE SIGNED

APPENDIX A

Gathering and Handling of Wild Horses Instruction Memorandum No. 2015-151

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240-0036
<http://www.blm.gov>

September 25, 2015

In Reply Refer To:
4720 (260) P

EMS TRANSMISSION 09/29/2015
Instruction Memorandum No. 2015-151
Expires: 09/30/2018

To: All Field Office Officials (except Alaska)
From: Assistant Director, Resources and Planning
Subject: Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers

Program Area: Wild Horse and Burro (WH&B) Program

Purpose: The purpose of this Instruction Memorandum (IM) is to establish policy for the Wild Horse and Burro (WH&B) Gather component of the Comprehensive Animal Welfare Program (CAWP). It defines standards, training and monitoring for conducting safe, efficient and successful WH&B gather operations while ensuring humane care and handling of animals gathered.

Policy/Action: The Bureau of Land Management (BLM) is committed to the well-being and responsible care of WH&B we manage. At all times, the care and treatment provided by the BLM and its contractors will be characterized by *compassion and concern* for WH&B well-being and welfare needs.

All State, District and Field Offices are required to comply with the CAWP policy for all gathers within their jurisdiction. The CAWP for WH&B gathers includes three components:

1. Comprehensive Animal Welfare Program Standards for Wild Horse and Burro Gathers (Attachment 1): These standards include requirements for trap and temporary holding facility design; capture and handling; transportation; and appropriate care after capture. The standards have been incorporated into helicopter gather contracts as specifications for performance.
2. Training: All Incident Commanders (IC), Contracting Officer Representatives (COR), Project Inspectors (PI) and contractors must complete a mandatory training course. The training is available online via DOI Learn: Course Title: BLM's Comprehensive Animal Welfare Program (CAWP) – gathers; Course Number: 4700-13.
3. CAWP Gather Assessment Tool (Attachment 2): The Gather Assessment Tool will be used during FY2016 for evaluating the effectiveness of mandatory training and adequacy of the Standards for CAWP for WH&B Gathers. The WO-260 Division is responsible for overseeing implementation of assessments as well as providing the necessary access to the assessment tool for those gathers selected for internal assessment during FY2016.
4. Starting in FY2017, the Assessment Tool will be used to evaluate compliance by the BLM and its contractors with the Standards for CAWP for WH&B Gathers. The WO-260 Division will oversee the completion of all assessments as well as providing the necessary access to the assessment tool for those gathers identified for both internal and external assessment by internal and external personnel during FY2017.

This IM supersedes Interim IM No. 2013-059, Wild Horse and Burro Gathers: Comprehensive Animal Welfare Policy which was issued as part of a package of IMs covering various aspects of the management of WH&B gathers, including:

- IM No. 2013-058, Wild Horse and Burro Gathers: Public and Media Management.
- IM No. 2013-060, Wild Horse and Burro Gathers: Management by Incident Command System
- IM No. 2013-061, Wild Horse and Burro Gathers: Internal and External Communicating and Reporting

The goal of this IM is to ensure that the responsibility for humane care and treatment of WH&Bs remains a high priority for the BLM and its contractors at all times. The Bureau's objective is to use the best available science, husbandry and handling practices applicable for WH&Bs and to make improvements whenever possible, while also meeting our overall gather goals and objectives in accordance with current BLM policy, standard operating procedures and contract requirements. The CAWP and its associated components will be reviewed regularly and modified as necessary to enhance its transparency and effectiveness in assuring the humane care and treatment of the WH&Bs.

The Lead COR is the primary party responsible for promptly addressing any actions that are inconsistent with the Standards set forth in the CAWP. The Lead COR may delegate responsibility to an alternate COR. The Lead COR will promptly notify the contractor if any improper or unsafe actions are observed and will ensure that they are promptly rectified. If issues are left unresolved or immediate action is required, the Lead COR has the authority to suspend gather operations. Through coordination with the Contracting Officer, the Lead COR shall, if necessary, ensure that corrective measures have been taken to prevent such actions from reoccurring and all follow-up and corrective measures shall be reported as a component of the Lead COR's daily reports.

Timeframe: All portions of this policy are effective as of October 1st, 2015.

Budget Impact: This IM is implementing new policy and guidance with additional training and reporting requirements for personnel and contractors. The cost for the required training is about \$250 per person. CAWP program implementation, oversight, data compilation and reporting requirements will require an additional 12 to 15 work months per year.

Background: The authority for a Comprehensive Animal Welfare Program for WH&B Gathers is provided by Public Law 92-195, Wild Free-Roaming Horses and Burros Act of 1971 (as amended) and 43 CFR 4700.0-2.

The Comprehensive Animal Welfare Program for WH&B gathers consolidates and highlights the BLM's policies, procedures and ongoing commitment to protect animal welfare; provide training for employees and contractors on animal care and handling; and implement a gather assessment tool which will be used to evaluate the agency's and contractor's adherence to standards for the handling and care of animals during gather operations.

Manual/Handbook Sections Affected: None

Coordination: This IM was coordinated among WO-100, WO-200, WO-260, WO-600, WH&B State Leads and WH&B Specialists.

Contact: Bryan Fuell, On-Range Branch Chief, Wild Horse and Burro Program, at 775-861-6611.

Signed by:
Michael H. Tupper
Acting, Assistant Director
Resources and Planning
2 Attachments

Authenticated by:
Robert M. Williams
Division of IRM Governance, WO-860

- 1 - Comprehensive Animal Welfare Program Standards for Wild Horse and Burro Gathers (20 pp)
- 2 - CAWP Gather Assessment Tool screen shots (26 pp)

APPENDIX B

Fertility Control Treatment Approved Standard Operating and Post-treatment Monitoring Procedures (SOPs)

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

March 12, 2009

In Reply Refer To:
4710 (260) P

EMS TRANSMISSION 03/17/2009
Instruction Memorandum No. 2009-090
Expires: 09/30/2010

To: All Field Officials (except Alaska)

From: Assistant Director, Renewable Resources and Planning

Subject: Population-Level Fertility Control Field Trials: Herd Management Area (HMA) Selection, Vaccine Application, Monitoring and Reporting Requirements

Program Area: Wild Horse and Burro Program

Purpose: The purpose of this Instruction Memorandum is to establish guidance for population-level fertility control field research trials. The primary objective of these trials is to evaluate the effects of a single year or 22-month Porcine Zona Pellucida (PZP) immunocontraceptive vaccine treatment on wild horse population growth rates while expanding the use of these tools in the field.

Policy/Action: This policy establishes guidelines for selecting HMAs for population-level fertility control treatment, vaccine application, and post-treatment monitoring and reporting. It is the policy of the Bureau of Land Management (BLM) to apply fertility control as a component of all gathers unless there is a compelling management reason not to do so.

HMA Selection

Managers are directed to explore options for fertility control trials in all HMAs or complexes when they are scheduled for gathers. Further, an alternative outlining implementation of a fertility control treatment under a population-level research trial shall be analyzed in all gather plan environmental assessments (EA's). Attachment 1 contains the Standard Operating Procedures (SOPs) for the implementation of the single-year and 22-month PZP agents, which should be referenced in the EA.

Fertility control should not be used in a manner that would threaten the health of individual animals or the long-term viability of any herd. In order to address the latter requirement, managers must evaluate the potential effects of fertility control on herd growth rates through use of the Jenkins Population Model (WinEquus). Fertility control application should achieve a substantial treatment effect while maintaining some long-term population growth to mitigate the effects of potential environmental catastrophes.

Fertility control will have the greatest beneficial impact where:

1. Annual herd growth rates are typically greater than 5%.
2. Post-gather herd size is estimated to be greater than 50 animals.

3. Treatment of at least 50% of all breeding-age mares within the herd is possible using either application in conjunction with gathers or remote delivery (darting). A maximum of 90% of all mares should be treated and our goal should be to achieve as close as to this percentage as possible in order to maximize treatment effects.

Fertility control should not be dismissed as a potential management action even if the above conditions are not met. Regardless of primary capture method (helicopter drive-trapping or bait/water trapping), managers should strive to gather horses in sufficient numbers to achieve the goals of the management action, such as selective removal and fertility control treatment. After decisions are made to apply fertility control, historical herd information, remote darting success (if employed) and post-gather herd demographic data must be reported to the National Program Office (NPO). See the Reporting Requirements section on page four.

Vaccine Application and Animal Identification at Gather Sites Using the 22-Month Vaccine

Once an HMA has been selected as a population-level field trial site, the NPO will designate a trained applicator to administer the vaccine during the scheduled gather. The applicator will be responsible for securing the necessary vaccine from the NPO, transporting all application materials and freeze-marking equipment to the gather site, administering the treatment, and filing a treatment report with the NPO. See Attachment 1 for SOP for Population-level Fertility Control Treatments.

All treated mares will be freeze-marked with two 3.5-inch letters on the left hip for treatment tracking purposes. The only exception to this requirement is when each treated mare can be clearly and specifically identified through photographs. The treatment letters will be assigned and provided by the NPO after the gather and fertility control application is approved by the authorized officer. A different first letter is assigned for each fiscal year starting with fiscal year 2004 and the letter "A." The second letter of the freeze-mark is specific to the application.

Each BLM State Office (SO) is responsible for coordinating with the State Brand Inspector on the use of the identified two-letter freeze-mark. Based on this coordination, possible alternatives or additions to this marking policy are listed below:

1. Use of the adult or foal size angle-numeric BLM freezemark on the neck while recording each treatment product and date with the individual horse's freezemark number.
2. Registration of the BLM fertility control hip mark.
3. Use of a registered brand furnished by the State.
4. Use of the same hip freeze-mark for all fertility control treatments within that State's jurisdiction plus an additional freeze-mark on the neck to differentiate between treatments within the State.
5. Use of the NPO assigned freeze-mark plus additional freeze-mark on the neck to differentiate between treatments within the State.

As an example, the Nevada State Brand Inspector requires that an "F" freeze-mark be applied to the left neck along with the two-letter hip mark assigned by NPO.

Regardless of how the mares are marked, the marks must be identified in the fertility control treatment report in order to track when the mares were treated and the treatment protocol used.

Mares may be considered for re-treatment during subsequent gathers. All re-treatments will consist of the multi-year vaccine unless specifically approved by the NPO. Any re-treated mares must be re-marked or clearly identifiable for future information.

Vaccine Application and Animal Identification Using Remote Delivery (Darting)

Remote delivery of the one year vaccine by a trained darter/applicator will be considered and approved only when (1) application of the current 22-month PZP agent is not feasible because a gather will not be conducted, and (2) the targeted animals can be clearly and specifically identified on an on-going basis through photographs and/or markings. No animals should be darted that cannot be

clearly and positively identified later as a treated animal. To increase the success rate of the darting and to insure proper placement of the vaccine, darting should occur along travel corridors or at water sources. If necessary, bait stations using hay or salt may be utilized to draw the horses into specific areas for treatment. The applicator will maintain records containing the basic information on the color and markings of the mare darted and her photographs, darting location, and whether the used darts were recovered from the field. See Appendix 1 for SOP for Population-Level Fertility Control Treatments.

Post-treatment Monitoring

At a minimum, the standard data collected on each treated herd will include one aerial population survey prior to any subsequent gather. This flight will generally occur 3 to 4 years after the fertility control treatment and will be conducted as a routine pre-gather inventory funded by the Field Office (FO). The flight should be timed to assure that the majority of foaling is completed, which for most herds will require that flights be scheduled after August 1st. In addition to pre-gather population data (herd size), information on past removals, sex ratio, and age structure (capture data) will be submitted to the NPO after the first post-treatment gather.

The following standard data will be collected during all post-treatment population surveys:

1. Total number of adult (yearling and older) horses observed.
2. Total number of foals observed.

These data are to be recorded on the Aerial Survey Report form (Attachment 4). In planning post-treatment population surveys, the new population estimation techniques being developed by U.S. Geological Survey (USGS) are strongly recommended. In general, however, it is not necessary that anyone try to identify treated and untreated mares and specifically which mares have foaled during aerial surveys.

To obtain more specific information on vaccine efficacy, some HMAs may be selected for intensive monitoring beginning the first year after treatment and ending with the first gather that follows treatment. These surveys should be completed annually within the same month for consistency of the data. Selection will be based on the proportion of treated mares in the herd, degree of success with vaccine application, degree to which HMA selection criteria are met, and opportunities for good quality data collection. This determination will be made by the WH&B Research Advisory Team and the NPO in consultation with the appropriate Field Office (FO) and State Office (SO). HMAs selected for intensive monitoring will be identified in that specific State's Annual Work Plan. Washington Office 260 (WO260) will provide funding for the annual surveys in those HMAs selected for intensive monitoring.

Field Office personnel may conduct more intensive on-the-ground field monitoring of these herds as time and budget allow. These data should be limited to: 1) the annual number of marked and unmarked mares with and without foals and 2) foaling seasonality. These data, generated for FO use, should be submitted to the NPO to supplement research by the USGS.

Reporting Requirements

1) When an HMA is selected for fertility control treatment, the HMA manager will initiate and complete the appropriate sections of the Gather, Removal, and Treatment Summary Report (Attachment 2) and submit the report to the NPO. At the conclusion of the gather and treatment, the HMA manager will complete the remainder of the Gather, Removal, and Treatment Summary Report and submit it to the NPO within 30 days. The NPO will file and maintain these reports, with a copy sent to the National WH&B Research Coordinator.

2) Following treatment, the fertility control applicator will complete a PZP Application Report and PZP Application Data Sheet (Attachments 3 & 4) and submit it to the NPO that summarizes the treatment. The NPO will maintain this information and provide copies of the reports to appropriate FOs and USGS.

3) Managers are required to send post-treatment monitoring data (Aerial Survey Report, Attachment 5) to the NPO within 30 days of completing each aerial survey. Any additional on-the-ground monitoring data should be sent to the NPO on an annual basis by December 31st.

4) During the next post-treatment gather (generally 4 to 6 years after treatment), the manager will complete a new Gather, Removal, and Treatment Summary Report with pertinent information and submit the report to the NPO. Completion of this report will fulfill the requirements for monitoring and reporting for each population-level study. A possible exception would be if mares are treated (or re-treated) and the HMA is retained as a population-level study herd.

The USGS will analyze all standard data collected. The results of these analyses along with other research efforts will help determine the future use of PZP fertility control for management of wild horse herds by the BLM.

Timeframe: This Instruction Memorandum is effective upon issuance.

Budget Impact: Implementation of this policy will achieve cost savings by reducing the numbers of excess animals removed from the range and minimizing the numbers of less adoptable animals removed. The costs to administer the one-year PZP agent include the labor and equipment costs for the applicator and assistant of roughly \$4,000/month and the treatment cost of approximately \$25 per animal. The costs to administer the 22-month PZP agent include the capture cost of about \$1,000 per animal treated (under normal sex ratios it requires two horses, one stud and one mare, to be captured for each mare treated) and the PZP vaccine is approximately \$250 per animal. The budgetary savings for each foal not born due to fertility control is about \$500 for capture, \$1,100 for adoption prep and short-term holding, \$500-1,000 for adoption costs, and approximately \$475 per year for long-term holding of animals removed but not adopted. For each animal that would have been maintained at long term holding for the remainder of its life after capture, the total cost savings is about \$13,000. Any additional FO-level monitoring will be accomplished while conducting other routine field activities at no additional cost.

Population-level studies will help to further evaluate the effectiveness of fertility control in wild horse herds. Recent research results showed that application of the current 22-month PZP contraceptive appears capable of reducing operating costs for managing wild horse populations. Application of a 3-4 year contraceptive, when developed, tested, and available, may be capable of reducing operating costs by even more (Bartholow, 2004).

Background: The one-year PZP vaccine has been used with success on the Pryor Mountain and the Little Book Cliffs Wild Horse Ranges. The 22-month PZP vaccine has been administered to 1,808 wild horse mares in 47 HMAs since fiscal year 2004. This formulation has been shown to provide infertility potentially through the third year post-treatment as determined by a trial conducted at the Clan Alpine HMA in 1999. The intent of the ongoing population-level fertility control trials is to determine if the rate of population growth in wild horse herds can be reduced through the use of the currently available 22-month time-release PZP vaccine, applied within a 3-4 year gather and treatment cycle. Monitoring data collected over the next few years are essential to determine the effectiveness of the vaccine when applied on a broad scale as well as its potential for management use.

PZP is classified as an Investigational New Animal Drug and some level of monitoring will continue to be required until such time as the Food and Drug Administration (FDA) or the Environmental Protection Agency (EPA) either reclassify the vaccine or provide some other form of relief.

Manual/Handbook Sections Affected: The monitoring requirements do not change or affect any manual or handbook.

Coordination: The requirements outlined in this policy have been evaluated by the National Wild Horse and Burro Research Advisory Team, coordinated with the National Wild Horse and Burro Advisory Board, and reviewed by Field Specialists.

Contact: Questions concerning this policy should be directed to Alan Shepherd, WH&B Research Coordinator at the Wyoming State Office in Cheyenne, Wyoming at (307) 775-6097.

Reference: Bartholow, J.M. 2004. **An economic analysis of alternative fertility control and associated management techniques for three BLM wild horse herds.** Fort Collins, CO: U.S. Geological Survey. Open-File Report 2004-1199. 33 p.

Signed by:
Edwin L. Roberson
Assistant Director
Renewable Resources and Planning

Authenticated by:
Robert M. Williams
Division of IRM Governance, WO-560

5 Attachments

- 1- Standard Operating Procedure for Population-level Fertility Control Treatments (2 pp)
- 2- Gather Removal, and Treatment Report (3 pp)
- 3- PZP Application Report (1 p)
- 4- PZP Application Data Sheet (1 p)
- 5- Aerial Survey Report (1 p)

APPENDIX C

PZP Mixing Protocol

Mixing Vaccine and Adjuvant

Equipment Needed

2 5.0 cc glass syringes

1.5 inch needle

vial of adjuvant

vial of PZP

Luer-Lok connector

1.0 cc C-type or P-type Pneu-Dart dart with 1.5 inch barbless needle

Procedures

1. Place the 1.5 inch needle on a glass syringe
2. Draw out 0.5 cc of adjuvant
3. Using the same syringe, draw up the 0.5 cc of PZP
4. Holding the syringe very carefully (because the plunger can slip out), take off the needle and attach the syringe to the second syringe using the Luer-Lok connector (have the Luer-lok connector already attached to the second syringe).
5. Push the PZP-adjuvant mixture back and forth through the two syringes 100 times. The resulting emulsion will become thick and look white. THIS PROCEDURE IS VERY IMPORTANT AND IS RELATED TO THE PRESENTATION OF THE ANTIGEN AND THE SUBSEQUENT EFFICACY OF THE VACCINE.
6. Make sure all the emulsion is in one syringe.
7. Holding the first syringe very carefully (the one with the emulsion), remove the second syringe, leaving the Luer-Lock on the first syringe.
8. If you are loading a 2.0 or 3.0 mL plastic syringe for hand-delivery, attach the glass syringe

to the plastic syringe and inject the PZP emulsion in to the plastic syringe. It is helpful if you move the plunger of the plastic syringe just a bit before pumping the PZP emulsion into it. After loading the plastic syringe, disconnect the glass syringe and connect an 18g. 1.5 inch needle on the plastic syringe.

APPENDIX D **ANNUAL IMMUNOCONTRACEPTION DATA SHEET¹**

ZOOLOGICAL GARDEN:

SPECIES:

ID/ISIS NUMBER:

BIRTH DATE:

WEIGHT (KG):

TREATMENT OR CONTROL ANIMAL (CIRCLE ONE): T C

PREVIOUS REPRODUCTIVE HISTORY (OFFSPRING/YEARS OF BIRTH):

Inoculation Dates (m/d/y)	PZP Dose (μ g) ² / lot #	Adjuvant	Means of Administration ³	Bleeding Date s/ (titer)	Injection Site ⁴

¹ Send a photocopy of this form after first series of inoculations, and every year after booster during trial.

² The standard dose is 100 μ g unless you were otherwise notified.

³ Hand injection, pole-syringe, dart (specify type).

⁴ Where the injection was administered, either right or left.

CONCURRENT DRUG USE (DRUG NAMES, DOSE, DATES OF ADMINISTRATION)⁵:

POST INOCULATION REPRODUCTIVE HISTORY (BIRTHS AND DATES)⁶:

--

DESCRIBE ANY POST-TREATMENT BEHAVIORAL/CLINICAL SIGNS OF ESTRUS, WITH DATES:

--

DESCRIBE ANY

1. PRE-TREATMENT HEALTH PROBLEMS:

--

2. POST-TREATMENT HEALTH PROBLEMS:

--

⁵ Any other Pharmaceuticals used during the course of the study.

⁶ If any offspring were born, describe their general health.

3. UNUSUAL OR UNEXPECTED POST-TREATMENT BEHAVIORAL DISPLAYS OR PROBLEMS:

--

4. DATES WHEN MALE WAS REMOVED, SEPARATED AND/OR INTRODUCED:

--

5. IF PZP TREATMENT IS DISCONTINUED PLEASE STATE REASON:

--

ADDITIONAL REMARKS:

.

Note: If any treated animal is transferred to another zoo, please note new location on Data Sheet.

--

Return to:
Kimberly Frank
The Science & Conservation Center
ZooMontana
2100 S. Shiloh Road
Billings, MT 59106

Fax: (406) 652-9733

Revised: 9/12/06

APPENDIX E

Sand Wash Basin Horses to Remain in the HMA

SWB has 290 horses from age 1 to 4 years. Of this group, 75 specific horses should remain in the HMA due to color genetics, end of lineage, limited lineage, or they currently have a new foal.

The specific horses to remain in the HMA are listed below.

All horses above 4 years of age will remain in the HMA.

2015 Females

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1592	Catori			End of Lineage
1519	Cinch	Chestnut	star	Limited Lineage
1552	Lizzy	Bay	rhs, lhs	Limited Lineage
1543	Melody	Chestnut	star,strip,snip,lfp,rhs,lhs - pink right nostril	Color Genetics
1502	Stormie	Bay	blaze - freckles at top of blaze	End of Lineage

2015 Males

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1544	Avatar	Dun/Grulla		Color Genetics
1588	Merlin	Sorrel	blaze with spots	Limited Lineage
1550	Meteor	Palomino/Pinto	blaze	Color Genetics
1524	Tejas	Dun/Grulla		Color Genetics
1507	Topanos	Grey	star, snip	Color Genetics
1563	Tucker	Chestnut	star (high up)	Limited Lineage

2014 Females

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1494	Autumn	Chestnut	bald face	**DO NOT EUTHANIZE-send to GEMS
1485	Chinook	Sorrel	star	Limited Lineage
1469	Chipeta	Grulla Paint	bald face, 2fstking, 2hs	Color Genetics
1457	Cirrus	Black	star	Limited Lineage & has 2016 foal
1470	Corazon	Dun	solid	Has 2016 foal
1419	Dianka	Bay	star, strip, discnted snip	Has 2016 foal
1423	Heather	Grey Paint	star, snip, light grey	Color Genetics
1407	Honeyspice	Palomino	blaze, apron lt	End of Lineage & has 2016 foal
1421	Laramie	Cremello	solid	Corona/Cheyenne offspring - Limited
1405	Mercedes	Dun	star	Has 2016 foal
1436	Misty	Apricot Dun	star	Color Genetics
1484	Paloma	Sorrel	blaze, lhp	Picasso offspring & has 2016 foal
1415	Pintado	Chestnut Paint	star strip, discnted snip	Color Genetics
1482	Rayne	Sorrel	star, discnted strip, snip, lhs	Limited Lineage

1462	Ruby	Sorrel	solid	Strong Genetics - Highly Visible with Public
1489	Sand Painter	Dun Paint	bald face, rhp	Color Genetics
1458	Sapphire	Dun Paint	horizontal star, discnted strip, blue eyes	End of Lineage
1456	Solitaire	Grulla	star, strip	Color Genetics
1491	Tikki	Black	star, rhs,lhp	Color Genetics

2014 Males

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1439	Cisco	Grulla Paint	star, discnted strip,snip, 4 stkings	Color Genetics
1475	Encanto	Sorrel	star, discnted strip, snip	End of Lineage
1431	Glory	Grey	blaze	Limited Lineage
1417	Lego	Blk & Wht Paint	star	Color Genetics
1422	Pinyon	Sorrel Paint	bonnet, rhstking	Limited Lineage
1493	Shock Top	Chestnut Pinto	apron, right	Color Genetics
1492	Van Gogh	Sorrel Paint	blaze, sorrel spot over left eye with 5 dots around it	Last Picasso Offspring
1450	Yahtzee	Sorrel Paint	bonnet, lhstking, lhp	Color Genetics

2013 Females

ID	NAME	COLO R	MARKINGS	DO NOT REMOVE STATUS
1368	Arabella	Grulla	comma star	Has 2016 foal
1318	Bandera	Grey Paint	blaze, bald	Color Genetics & has 2016 foal
1336	Bandy	Grey Paint	star, discnted strip, snip, 2hstkings, front legs wht	Color Genetics
1316	Diamond	Bay	star, lfs, 2hs, no ear tips	Has 2016 foal
1332	Divine	Sorrel Paint	bonnet lf, bald rt, apron, rhstking, lhs	Has 2016 foal
1347	Faith	Bay Roan	star	Has 2016 foal
1306	Liberty	Red Roan	blaze	Has 2016 foal
1314	Mugsy	Sorrel	bald, rfs, 2hs, blue eyes	Limited Lineage
1319	Roly	Grey	lg star, lhstking, rhs, dunny grey	Has 2016 foal
1333	Serendipity	Grulla Paint	blaze, rhs, lhp, lfp	End of Lineage
1360	Shelby	Sorrel	star, discnted strip, snip	End of Lineage & has 2016 foal
1317	Tara	Bay Dk	double star, lhs	Has 2016 foal

2013 Males

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1373	Bogie	Black	star, faint thin strip, rhp	Color Genetics
1330	Ghost	Chestnut	star, 2hs	DO NOT EUTHANIZE -swollen hock, send to GEMS
1370	Heartthrob	Grey Dk	blaze, lhs, rhstking	Limited Lineage
1305	Hollywood	Grey Paint	bonnet lf, bald rt, lfp	Color Genetics
1372	Karma	Grulla		Color Genetics
1361	Kramer	Grey Paint	wide blaze, apron rt, lg spot rt barrel, sm spot lt barrel, dorsal	Color Genetics
1334	Midnight Blue	Black/Brown	star	Color Genetics & End of Lineage
1341	Rambo	Chestnut	rfc	Limited Lineage-Picasso offspring
1369	Rigel	Black	solid	Color Genetics
1345	Y'Oda	Sorrel Paint	bonnet, lhs	Color Genetics

2012 Females

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1222	Blue Moon	Grey Paint	wide blaze, apron, lwr lip pink, blk/grey mane, wht lf barrel	Color Genetics
1210	Comet	Black	blaze, rfp, lfc, lhs	End of Lineage
1202	Hopscotch	Grey Paint	bonnet, sorrel hilites, pink underside stifle	Color Genetics & has 2016 foal
1251	Kismet	Dun	star, 2fp, rhs	End of Lineage & has 2016 foal
1227	Mica	Chestnut	lg star	Has 2016 foal
1219	Mimi	Chestnut Paint	blaze (freckles in), lfs, lthstking	Has 2016 foal
1225	Question	Sorrel	crescent wrench blaze, 2fs, lhs, rhp (in)	Has 2016 foal
1228	Sagewood	Liver Chestnut	thin blaze, lwr lip pink, tail hilites, lwr lt legs	End of Lineage & has 2016 foal
1244	WildRose	Sorrel	star, discnted faint thin strip, 2hs	Has 2016 foal

2012 Males

ID	NAME	COLOR	MARKINGS	DO NOT REMOVE STATUS
1257	Cash	Dun Paint	Y blaze	Color Genetics
1232	Dakota	Grey Paint	blaze, apron, wt spots rt barrel, dorsal	Color Genetics
1252	Lennon	Sorrel Paint	bonnet, rhs	Limited Lineage
1216	Schatzi	Apricot Dun	star, discnted strip	Color Genetics & Limited Lineage
1207	Shakti	Grey Paint	bald, apron, lfs, blk mane and tail	Color Genetics
1235	Sunka Wakan	Grulla	solid	Color Genetics

Appendix F

Standard Operating Procedures for Wild Horse Gathers

Gathers are conducted by utilizing contractors from the Wild Horse Gathers-Western States Contract or BLM personnel. The following standard operating procedures (SOPs) for gathering and handling wild horses apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations would be conducted in conformance with the *Wild Horse Aviation Management Handbook* (BLM 2009b), IM 2015-151, and IM 2015-070.

Prior to any gathering operation, the BLM would provide for a pre-gather evaluation of existing conditions in the gather area(s). The evaluation would include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with WSA boundaries, the location of fences, other physical barriers, and acceptable gather locations in relation to animal distribution. The evaluation would determine whether the proposed activities would necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or gather operations could be facilitated by a veterinarian, these services would be arranged before the gather would proceed. The contractor would be apprised of all conditions and would be given instructions regarding the gather and handling of animals to ensure their health and welfare is protected.

Gather sites and temporary holding sites would be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads whenever possible.

The primary gather methods used in the performance of gather operations include:

1. Helicopter Drive Gathering. This gather method involves utilizing a helicopter to herd wild horses into a temporary gather site.
2. Helicopter Assisted Roping. This gather method involves utilizing a helicopter to herd wild horses to ropers.
3. Bait Trapping. This gather method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary gather site.

The following procedures and stipulations would be followed to ensure the welfare, safety and humane treatment of wild horses in accordance with the provisions of 43 CFR 4700 and IM 2015-151.

A. Gather Methods used in the Performance of Gather Contract Operations

The primary concern of the contractor is the safe and humane handling of all animals gathered. All gather attempts shall incorporate the following:

1. All gather sites and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move gather locations as determined by the COR/PI. All gather sites and holding facilities not located on public land must have prior written approval of the landowner.
2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR who would consider terrain, physical barriers, access limitations, weather, extreme temperature (high and low), condition of the animals, urgency of the operation (animals facing drought, starvation, fire rehabilitation, etc.) and other factors. In consultation with the contractor the distance the animals travel would account for the different factors listed above and concerns with each HMA.
3. All gather sites, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
 - a. Gather sites and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches high for burros, and the bottom rail of which shall not be more than 12 inches from ground level. All gather sites and holding facilities shall be oval or round in design.
 - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered with plywood or metal without holes.
 - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for burros, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5 feet above ground level for burros and 1 foot to 6 feet for horses. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
 - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses.
 - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking gates.
4. No modification of existing fences would be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.
5. When dust conditions occur within or adjacent to the gather site or holding facility, the

Contractor shall be required to wet down the ground with water.

6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, strays, or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government would require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and would be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the gather area(s). In areas requiring one or more satellite gather site, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation would be at the discretion of the COR.
7. The Contractor shall provide animals held in the gather sites and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the gather site or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. The contractor would supply certified weed free hay if required by State, County, and Federal regulation.
8. An animal that is held at a temporary holding facility through the night is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
9. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of gathered animals until delivery to final destination.
10. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI would determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.

11. Animals shall be transported to their final destination from temporary holding facilities as quickly as possible after gather unless prior approval is granted by the COR for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR. Animals shall not be held in gather sites and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays; unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the gather area may need to be transported back to the original gather site. This determination would be at the discretion of the COR or Field Office Wild Horse & Burro Specialist.

B. Gather Methods That May Be Used in the Performance of a Gather

1. Gather attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary gather site. If this gather method is selected, the following applies:
 - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
 - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to gather of animals.
 - c. Gather sites shall be checked a minimum of once every 10 hours.
2. Gather attempts may be accomplished by utilizing a helicopter to drive animals into a temporary gather site. If the contractor selects this method the following applies:
 - a. A minimum of two saddle-horses shall be immediately available at the gather site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one-half hour.
 - b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Gather attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor, with the approval of the COR/PI, selects this method the following applies:
 - a. Under no circumstances shall animals be tied down for more than one hour.
 - b. The contractor shall assure that foals shall not be left behind, or orphaned.
 - c. The rate of movement and distance the animals travel shall not exceed limitations

set by the COR/PI who would consider terrain, physical barriers, weather, condition of the animals and other factors.

C. Use of Motorized Equipment

1. All motorized equipment employed in the transportation of gathered animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI, if requested, with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.
2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that gathered animals are transported without undue risk or injury.
3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from gather site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have at least two (2) partition gates providing at least three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing at least two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5-foot-wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.
4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.
5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping as much as possible during transport.
6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:
 - 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);

- 8 square feet per adult burro (1.0 linear foot in an 8 foot wide trailer);
 - 6 square feet per horse foal (0.75 linear feet in an 8-foot-wide trailer);
 - 4 square feet per burro foal (0.5 linear feet in an 8-foot-wide trailer).
7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of gathered animals. The COR/PI shall provide for any brand and/or inspection services required for the gathered animals.
 8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor would be instructed to adjust speed.

D. Safety and Communications

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the gather of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government would take steps necessary to protect the welfare of the animals.
2. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor would be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.
3. The Contractor shall obtain the necessary FCC licenses for the radio system.
4. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.
5. Should the contractor choose to utilize a helicopter the following would apply:
 - a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
 - b. Fueling operations shall not take place within 1,000 feet of animals.

E. Site Clearances

1. No Personnel working at gather sites may excavate, remove, damage, or otherwise alter

or deface or attempt to excavate, remove, damage or otherwise alter or deface any archaeological resource located on public lands or Indian lands.

2. Prior to setting up a gather site or temporary holding facility, the BLM would conduct all necessary clearances (archaeological, T&E, etc.). All proposed site(s) must be inspected by a government archaeologist. Once archaeological clearance has been obtained, the gather site or temporary holding facility may be set up. Said clearance shall be arranged for by the COR, PI, or other BLM employees.
3. Gather sites and temporary holding facilities would not be constructed on wetlands or riparian zones.
4. No surface disturbing activities or surface occupancy within a 0.6-mile radius of the perimeter of occupied or undetermined Greater Sage-Grouse leks inside Priority Habitat Management Areas (PHMA).
5. No surface disturbing activities within 0.25-mile radius of the perimeter of occupied or undetermined Greater Sage-Grouse leks inside General Habitat Management Areas (GHMA).
6. No surface disturbing and/or disruptive activities or surface occupancy would occur within Greater Sage-Grouse nesting habitat from March 15 through June 30 in the LFO.
7. No surface disturbing and/or disruptive activities would occur within Greater Sage-Grouse PHMA nesting habitat, or within 2 miles of the lek or lek perimeter outside PHMA from March 15 through July 14 in the RFO (BLM 2015c, p. 36).

F. Animal Characteristics and Behavior

Releases of wild horses would be near available water when possible. If the area is new to them, a short-term adjustment period may be required while the wild horses become familiar with the new area.

G. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations would be made available to the extent possible; however, the primary considerations would be to protect the health, safety and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site BLM representative. It is BLM policy that the public would not be allowed to come into direct contact with wild horses being held in BLM facilities. Only authorized BLM personnel or contractors may enter the corrals or directly handle the animals. The general public may not enter the corrals or directly handle the animals at any time or for any reason during BLM operations.

H. Responsibility and Lines of Communication

- Rawlins Field Office – Contracting Officer's Representative/Project Inspector: Benjamin Smith
Alternate – Contracting Officer's Representative/Project Inspector: Scott Fluer
- Wyoming State Office – Contracting Officer's Representative/Project Inspector: N/A

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. The Rawlins and Rock Springs Assistant Field Managers for Renewable Resources and the Rawlins and Rock Springs Field Managers will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, District Office, State Office, National Program Office, and BLM Holding Facility offices. All employees involved in the gathering operations would keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries would be handled through the Assistant Field Manager for Renewable Resources and District Public Affairs Officer. These individuals would be the primary contact and would coordinate with the COR/PI on any inquiries.

The COR would coordinate with the contractor and the BLM Corrals to ensure animals are being transported from the gather site in a safe and humane manner and are arriving in good condition.

The contract specifications require humane treatment and care of the animals during removal operations. These specifications are designed to minimize the risk of injury and death during and after gather of the animals. The specifications would be vigorously enforced.

Should the Contractor show negligence and/or not perform according to contract stipulations, he would be issued written instructions, stop work orders, or defaulted.

Appendix G

2014 Sand Wash Herd Management Area (HMA) Wild Horse Utilization Monitoring

Background: The Sand Wash Herd Management Area is located 45 miles west of Craig, Colorado, in the Sand Wash Basin. The HMA encompasses 157,730 total acres, of which 154,940 acres are public, 1,960 acres are private and 840 acres are managed by the State of Colorado. The HMA has a gradual elevation change from 8,100 feet at Lookout Mountain to 6,100 feet at the south end of the HMA. The interior of the HMA consists of gently rolling to moderately steep slopes cut by numerous small drainages leading into Sand Wash Draw. Yellow Cat Wash and Dugout Wash drain most of the eastern half of the basin. Bordering Sand Wash Basin on the southwest is Dry Mountain, a small mountain range with elevations ranging from 6,900 to 7,500 feet. To the northwest, the HMA is bordered by the Vermillion Bluffs, a large extended rim with elevations ranging from 6,800 to 8,100 feet. The HMA is bordered on the east side by Sevenmile Ridge which extends in a north/south direction from CO Highway 318 northerly along the entire east side of the HMA towards Nipple Rim.

The HMA lies within portions of the Sand Wash, Sheepherder Springs, Nipple Rim, and Lang Springs Allotments. Domestic sheep are permitted for dormant season and early season use relying predominantly on browse during the winter, and early green up of grasses and forbs in March and April. Cattle are licensed for 971 AUMs of winter use in the Sheepherder Spring Allotment. This use historically has not been activated.

The HMA supports three species of big game, elk, mule deer and pronghorn. Winter habitat for elk is located primarily in the north and eastern portions of the HMA, while winter habitat for mule deer and pronghorn can be found throughout the management area. The HMA also provides important habitat for greater sage-grouse. There are six active leks located within the boundary of the management area and approximately two-thirds of the HMA provides nesting habitat for this species. Preliminary priority habitat is located in the north, central and eastern portions of the HMA.

The HMA contains large areas of salt desert shrub plant communities that recover slowly from impacts such as grazing and mechanical surface disturbance. The predominant plant community is sagebrush/perennial grass intermingled with rabbitbrush and salt desert shrubs such as shadscale, horsebrush, greasewood, and Nuttall's saltbush. In areas where soils and topography allow, Nuttall's saltbush is the dominant shrub and is associated with winterfat, budsage, and kochia in some areas.

Wild and domestic ungulates rely on browse plant species for much of their nutritional needs during the winter months. While the majority of shrub species contain high levels of protein in their twig tips and leaves, Nuttall's saltbush is the most palatable of the browse plants and so is often the most heavily impacted by grazing animals. During mild winters or winters with below average or average snow accumulation, key islands of localized saltbush communities can receive high utilization from the various users. During harsh winters and periods of high snow accumulation, Wyoming big sagebrush and salt desert shrub species receive the highest use. The heaviest competition between all range users occurs during the early spring when increased

dietary needs associated with birthing and breeding are further increased by low body fat reserves, and low nutritional content of plant species in the early spring.

During the spring and summer, wild horse diets consist primarily of native perennial grasses such as Indian ricegrass, bottlebrush squirreltail, western wheatgrass and needleandthread grass.

While the majority of the HMA boundary is fenced, horses in the Sand Wash herd roam freely through their range with no internal fencing or impassible topographic features to limit their movements. Fewer horses concentrate in the south, southwest and western portion of the HMA regardless of the time of year. This is the result of several factors including seasonal recreational traffic, lack of perennial water sources, saline water (less palatable), and home range preference. The southern and southwestern HMA boundary adjoins the West Boone Draw Allotment which is permitted for domestic horses between December and May of each year.

The HMA boundary has numerous wire and metal gates. In the early spring, and extending through July, the southern and southeastern HMA has been experiencing an increase in recreational off-highway vehicle use. During archery and rifle season, between August and mid-October, the HMA is popular with large game hunters. The increases in human traffic and activity has increased the incidence of gates left open and consequently the number of wild horses that leave the HMA, as well as occasional incidents where domestic horses relocate inside the HMA.

Horses, livestock and wildlife in the HMA rely on a combination of developed wells, undeveloped springs and seeps and water reservoirs. Reservoirs are the primary source of water for all users and are widely dispersed through the HMA. In years when the HMA experiences below average precipitation, the majority of ponds dry up between July and whenever measurable precipitation accumulates in the fall. This results in wildlife either leaving the HMA or competing with wild horses for remaining water sources.

Rationale: The Little Snake Field Office (LSFO) Resource Management Plan (RMP) and Record of Decision (ROD) signed in October 2011, identified an appropriate management level (AML) of 163 to 362 wild horses. The population in the Sand Wash HMA was approximately 408 adults and 94 foals for a total of 502 wild horses in October of 2014.

The LSFO RMP established goals and objectives for the Sand Wash HMA which includes encouraging herd health while maintaining a thriving, natural ecological balance of rangeland resources. In order to accomplish this, the herd must be maintained at a level which ensures that over utilization of forage and range degradation does not occur.

In 2008, the Humane Society of the United States (HSUS) began a study on two formulations of Porcine Zona Pellucida (PZP) contraceptive vaccine on wild horses in Sand Wash HMA. The study was conducted on 60 mares for a period of 5 years through 2013. The use of both formulations was analyzed in EA# CO-100-2008-050 for both efficacy and effects to wild horses and the rest of the natural environment.

With the Sand Wash horse population increasing, despite efforts by the HSUS, the BLM must consider other population control options. In order to validate any population control measures data is needed to corroborate the need for population control.

To date the LSFO does not have any specific or comprehensive data that reflects annual horse utilization over the entire HMA.

The primary objective of this monitoring effort was to capture specific horse use of current year's growth without livestock utilization influence. All allotments that are encompassed within the HMA boundary are authorized for fall/winter/early spring, so by monitoring in October/November of 2014, prior to any livestock turnout for the 2014 season, we could best capture horse use over the 2014 growing season. See Table 1 below for 2012/2013 livestock use summary (all data taken from BLM Rangeland Administration System (RAS)).

Table 1 – HMA Livestock Use Summary

Allotment	AUM's Authorized	2012 Actual Use (based on billed AUMs)	2013 Actual Use (based on billed AUMs)	Date Last Used by Livestock	Acres in HMA
Lang Spring #04212	363	0	0	No use in Lang Spring since prior to 2000	3,547
Nipple Rim #04213	3,977	2,379 (60%) (sheep)	3,971 (100%) (sheep)	02/28/2014	16,247
Shepherd Spring #04217	9,041	1,345 (15%) (sheep)	1,703 (19%) (sheep)	12/07/2013	74,883
Sand Wash #04219	6,377*	1,578 (25%) (sheep)	Non-Use (sheep)	04/10/2012	62,248

* The Sand Wash Allotment has pastures outside the HMA. Numbers presented above are only for the portion of the allotment within the HMA.

Methodology: A LSFO interdisciplinary team concurred that an appropriate method for this monitoring effort would be the Qualitative Assessment-Landscape Appearance Method as described in the BLM Technical Reference (TR) 1734-03 Utilization Studies & Residual Measurements, Interagency 1999, pg 119.

Using ArcGIS 10.1 desktop geographic information system software for mapping and a software extension, XTools Pro for ArcGIS desktop 9.1, a process that creates a fishnet grid was used. Using the HMA administrative boundary as a source extent a ten row and ten column grid (using the software default) was placed over the HMA area. The grid intersections were identified and using XTools "Create Intersection Points" a data source was created. This resulted in a grid of points being spaced approximately two miles apart across the HMA. The points were numbered 1 – 50 (number 8 was accidentally omitted from point count and was only discovered after data collection had begun, therefore the correction was not made). Each site point acts as a data sampling point for establishing transects.

For each sampling point, using Global Positioning System (GPS) hand held data collection units, the center monitoring point was located and a GPS point was taken. Using a standard hand held compass set for a 15° declination, a 300' tape was pulled in a north direction. Ocular utilization data was taken at 300', 600', 900' & 1,200' along a north transect. This was repeated in each cardinal direction for a maximum of sixteen data collection points per each sampling point. Based on a ¼ mile buffer encompassing each sampling point and set of data collection points approximately 125 acres per sampling point was represented (see Appendix 1 for the sampling

design layout). It was discussed and recommended that in lieu of the tape reel, range finders could be used. This proved to be efficient and accurate as well as expediting the data collection process. As anticipated, not all sampling points were sampled with a full sixteen data collection points. Some data points were eliminated due to boundaries, topographical features, slope, site characteristics, or other limiting factors. It was agreed upon by the BLM ID team that any number of data collection point's ≤ 16 for each sampling point was representative for that sampling point. Rationale for the elimination of any data collection point was noted on the data collection sheet. Each data collection point at site locations was taken using GPS hand held data collection units for repeatability.

One photo for each sampling point was taken at the start of the north transect.

The designated off highway vehicle (OHV) area in the south west portion of the HMA was omitted from data collection due to the circumstance that recreational activities discourages seasonal horse use in large numbers.

Precipitation Adjustment Summary

Precipitation is a significant factor affecting annual rangeland production levels. In summarizing the utilization data for the HMA, this precipitation-yield factor was included to represent this annual variability. The method used was based on the USDA bulletin listed below.

Adjusting and Forecasting Herbage Yields in the Intermountain Big Sagebrush Region of the Steppe Province, Station Bulletin 659, August 1983, Agricultural Experiment Station, Oregon State University, Corvallis in cooperation with Agricultural Research Service U.S. Department of Agriculture.

(<https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/15797/StationBulletin659.pdf?sequence=1>)

Using the precipitation data shown in the climate section, the following formulas and values were used to extrapolate the precipitation adjusted utilization levels.

- The Long Term Median (LTM) for Sand Wash was based on 47 years of data (see chart in climate section). The years with null values were excluded from the calculation. The data was converted to the crop year precipitation received between September through June of the following year as shown in Appendix 2. The LTM for this area was 10.31 inches.

- The 2013-14 Current Year Precipitation (CYP) was 12.47 inches.

- Using the LTM and CYP the Precipitation Index (PI) was computed as follows:

$$PI = (CYP / LTM) \times 100$$

$$(12.47 / 10.31) \times 100 = 121\%$$

- Using this PI and Table 2 from the bulletin a Yield Index (YI) can be determined. The PI of 121% equals a YI of 126% using this method.

- The Utilization level can then be adjusted using the YI. The calculation for this adjustment is:

$$\text{Adjusted Utilization} = \text{Utilization Estimated} \times YI \times 100$$

This calculation is found for each site in the Sand Wash utilization data.

Climate:

The following precipitation data was used for the precipitation adjustment to the utilization data. The data is from the Western Regional Climate Center.

<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?co5446>

11/18/2014

MAYBELL, COLORADO - Climate Summary

MAYBELL, CO

Monthly Sum of Precipitation (Inches)

(055446)

File last updated on Nov 18, 2014

a = 1 day missing, b = 2 days missing, c = 3 days, ..etc.,

z = 26 or more days missing, A = Accumulations present

Long-term means based on columns; thus, the monthly row may not
sum (or average) to the long-term annual value.

MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5

Individual Months not used for annual or monthly statistics if more than 5 days are missing.

Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1958	-----z	-----z	-----z	-----z	-----z	0.09k	0.45	0.13	1.34	0.06	0.62	0.21	2.81 f
1959	0.16	1.26	0.56	0.19	0.72	1.44	0.14	0.71	3.16	1.85	0.31	0.45	10.95
1960	0.37	1.40	0.99	0.44	0.49	0.46	0.30	0.76	0.33	0.82	1.09	0.39	7.84
1961	0.05	0.41	1.56	1.03	1.34	0.05	0.49	0.61	3.12	1.33	0.49	0.75	11.23
1962	1.18	1.91	0.45	1.10	0.63	0.56	0.05	0.16	0.26	0.27	0.62	0.26	7.45
1963	0.33	0.38	1.34	2.77	0.20	0.54	0.39	2.46	0.42	0.32 a	0.98	0.48	10.61
1964	0.85	0.51	1.04	1.78	0.90	1.15	0.27	0.86	0.85	0.33	3.04	2.73	14.31
1965	1.34	0.41	0.54	1.32	1.74	1.65	1.95	1.47	2.30	0.31	1.50	1.48	16.01
1966	0.30	0.43	0.28	0.09	0.20	0.22	0.41	1.27	1.00	1.93	0.54	1.89	8.56
1967	0.53	0.35	0.38	0.68	1.64	1.98	0.37	0.31	0.811	0.36	1.23	2.60	10.43 a
1968	0.29	0.86	0.88	2.58	1.29	0.40	0.80	2.19	-----z	0.44	0.57	0.63	10.93 a
1969	1.14	0.85	0.29	1.04	0.00	2.15	1.06	0.70	1.62	2.19	0.71	1.10	12.85
1970	0.36	0.35	0.82	0.77	0.51	1.88	0.74	0.11	1.05	2.77	1.44	0.38	11.18
1971	1.67	0.81	0.39	0.71	2.62	0.04	0.34	0.29	1.02	2.36	0.36	0.70 a	11.31
1972	0.19	0.64	0.62	0.98	0.58	0.68	0.40	1.36	1.42	1.49	0.56	1.81	10.73
1973	0.34	0.14	0.81	1.28	1.51	1.36	1.60 q	0.87	1.08	0.27	-----z	-----z	7.66 c
1974	0.30 p	0.19	1.06	1.01	0.03	1.92	1.33	0.19	0.32	-----z	-----z	-----z	6.05 d
1975	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	0.001
1976	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	0.001
1977	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	0.821	1.03	2.80	0.70	4.53 i
1978	2.10	0.85	2.10	2.71	1.42	0.64	0.40	1.27	1.69	0.91	2.81	2.12	19.02
1979	0.83	1.63	4.11	1.18	3.27	0.62	1.07	1.36	0.10	2.64	0.92	0.54 a	18.27
1980	2.15	1.79	2.39	1.49	2.72	-----z	-----z	-----z	-----z	-----z	-----z	-----z	10.54 g
1981	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	0.001

<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?co5446>

1/2

1982	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	-----z	0.001
1983	-----z	-----z	0.29	0.67 g	2.28	1.04	1.69	0.98	0.71	2.01	2.18	3.25	14.43 c
1984	0.71	1.01	1.48 a	2.19 e	0.48	2.74	1.48	1.72	1.89 g	2.63 e	0.69	1.11	16.24 a
1985	1.08	0.33 b	1.21 a	3.35 b	0.68 i	2.95	2.92	0.051	0.65 b	1.94	1.92	0.58 a	16.93 b
1986	0.21	0.39 a	1.13	1.49 d	1.55	1.34	1.88	0.37 c	2.21 t	1.24 f	0.90	0.53 a	9.79 b
1987	0.91	1.07	1.55 a	0.22	0.42 b	0.19 x	0.97	1.52	0.10 a	0.63	0.96	0.92	9.27 a
1988	1.56	0.28	0.53	0.68	1.39	0.48	0.12	0.96	-----z	0.00	1.08	0.80 b	7.88 a
1989	0.30	1.45	0.74 a	0.14	0.03	0.60	0.67	0.22 f	0.68	0.26	0.75	0.23	5.85 a
1990	0.23	2.12	0.87	1.12	0.31	-----z	0.35 g	0.26	0.66 b	2.06	1.96	0.98	10.57 b
1991	0.24	0.22	1.40	1.03 c	0.40	0.79	0.83	1.02 a	0.70	1.20	1.10	0.45	9.38
1992	0.25	0.49	0.89	0.69	1.22	0.23	2.40	0.36	0.95	1.03	0.95	0.97 b	10.43
1993	1.21	0.79 b	1.08 a	2.16	1.12	0.21	0.53	0.15 a	0.38	2.38	1.30	0.34	11.65
1994	0.43	0.56	0.74	0.93	0.29	0.25	0.00	1.67	0.81 a	1.37	1.52	0.31	8.88
1995	0.82	1.47	1.45	2.14	5.15	1.35	0.91	0.63	1.27 b	1.05	0.67	0.28	17.19
1996	2.06	1.53	0.44	2.89	1.11	0.28	1.00	0.83	0.76	1.67 e	2.39	0.82	15.78
1997	2.21 a	0.60	0.31	2.16	1.35 a	0.73 e	0.61	2.73	4.02	2.15 d	0.54	0.45	17.86
1998	0.60	0.80	2.29 a	0.72	0.27 a	3.22 c	1.87	0.34	0.43 c	1.98	0.60	0.62	13.74
1999	1.00	0.92 d	0.53	5.17	1.95 a	0.32 h	0.77 a	0.93	0.67 c	0.31 d	0.25	0.53	13.03 a
2000	0.74	1.14	1.00	1.29	0.95 c	0.05	0.36	0.38	1.60 e	1.10	1.21	0.93	10.75
2001	0.45	0.86	0.59	1.21	1.41	0.39	0.30	1.33	0.49 c	1.01	1.20	0.37	9.61
2002	0.66	0.33	1.58	0.62	0.00	0.20	0.86	0.85	1.27	1.30	0.89 a	0.45 a	9.01
2003	0.62	1.37	1.41	0.30 e	0.97	0.67	0.03	1.01	0.59	0.33	1.53	0.91	9.74
2004	0.49	0.63	0.19	0.73 i	0.58	0.55	1.12	0.46	1.07	1.44 f	0.92	0.37 a	6.38 b
2005	1.75 b	1.73	0.60	1.49	1.24	2.42	0.13	0.62 b	1.13	1.75 c	0.92	0.29	14.07
2006	0.74	0.27	1.88	0.94	0.19	0.19	0.37	1.06	1.90	3.36 g	0.71	0.35	8.60 a
2007	1.29	1.18	0.82	0.51	1.25	0.49	0.56	0.74 a	2.79	1.81	0.10	3.46	15.00
2008	1.22 a	0.95	1.50	0.50	2.24	0.64 d	0.09 a	0.91	2.03	0.38	1.10 a	2.06	13.62
2009	1.20 j	0.11	1.89	2.16	1.44	3.26	0.28 b	1.30	0.56	1.29	1.09	1.04	14.42 a
2010	0.34	0.71	1.03 b	1.87	0.82	1.29	0.47	1.79	0.45	1.40	1.79	3.44	15.40
2011	0.55	1.03	1.22	3.78	2.03	0.51	1.50	0.85	0.75	0.82	0.53 e	0.37	13.94
2012	0.38	1.24	0.52	0.61	0.18	0.00	0.15	0.09	1.02	0.32	1.11	2.20	7.82
2013	1.19	0.50	0.64	2.38	0.86	0.00	0.57	0.55	2.53	2.11	0.99	1.14	13.46
2014	0.66	0.30	1.30	0.86	2.14	0.44	0.26	2.94	2.09	1.26	-----z	-----z	12.25 b

Period of Record Statistics

MEAN	0.81	0.83	1.05	1.40	1.15	0.96	0.75	0.95	1.18	1.23	1.11	1.02	12.35
S.D.	0.58	0.51	0.70	1.03	0.97	0.89	0.65	0.67	0.88	0.79	0.67	0.88	3.22
SKEW	0.94	0.64	1.88	1.39	1.64	1.17	1.38	1.09	1.34	0.18	1.22	1.50	0.39
MAX	2.21	2.12	4.11	5.17	5.15	3.26	2.92	2.94	4.02	2.77	3.04	3.46	19.02
MIN	0.05	0.11	0.19	0.09	0.00	0.00	0.00	0.09	0.10	0.00	0.10	0.21	7.45
YRS	48.00	50.00	51.00	49.00	50.00	47.00	49.00	49.00	46.00	48.00	49.00	49.00	33.00

Using this data we can also specifically look at the timing of precipitation. Timing of precipitation can largely influence plant growth and re-growth, especially into late-summer and fall. The following table compares the long term average monthly precipitation to the timing of the 2014 precipitation by month. Significant above average moisture is seen going into the 2014 growing season (May) and into late summer (August and September).

Month	Average Precipitation (in.) 1959-2014	2014 Precipitation (in.)	% of Average
January	0.79	0.66	83%
February	0.82	0.30	36%
March	1.04	1.30	125%
April	1.40	0.86	62%
May	1.11	2.14	194%
June	0.89	0.44	50%
July	0.73	0.26	36%
August	0.95	2.94	311%
September	1.18	2.09	177%
October	1.30	1.26	97%
November	1.04	--	--
December	0.97	--	--

Results:

Below is the summary table for data collected. The first three columns from left to right are the raw data as collected for both herbaceous and browse and then averaged. The precipitation adjusted utilization data is shown to the right. Adjusted data is used for the summary and map.

2014 Sand Wash HMA Monitoring						
				<i>Utilization adjusted for Precipitation</i>		
				<i>(Utilization * YI)</i>	(see precipitation summary)	
Site #	% Utilization Herbaceous	% Utilization Browse	Average	Adjusted % Utilization Herbaceous	Adjusted % Utilization Browse	Average
1	Abandoned - State Land					
2	29%	28%	29%	36%	36%	36%
3	29%	17%	23%	37%	22%	29%
4	12%	13%	13%	16%	16%	16%
5	20%	26%	23%	25%	33%	29%

6	22%	25%	23%		27%	31%	29%
7	21%	24%	23%		26%	30%	28%
9	16%	25%	21%		21%	31%	26%
10	28%	24%	26%		35%	30%	32%
11	26%	13%	20%		33%	16%	25%
12	22%	19%	21%		27%	24%	26%
13	14%	22%	18%		18%	28%	23%
14	33%	26%	30%		42%	33%	38%
15	30%	19%	24%		37%	24%	31%
16	26%	20%	23%		33%	25%	29%
17	33%	23%	28%		42%	29%	35%
18	27%	36%	31%		33%	45%	39%
19	19%	32%	26%		24%	40%	32%
20	50%	54%	52%		63%	68%	66%
27	39%	33%	36%		49%	42%	45%
22	53%	49%	51%		66%	61%	64%
23	48%	49%	48%		60%	61%	61%
24	29%	36%	32%		37%	45%	41%
25	31%	49%	40%		39%	61%	50%
26	19%	26%	23%		24%	32%	28%
27	21%	36%	28%		26%	45%	36%
28	27%	39%	33%		34%	49%	42%
29	31%	41%	36%		39%	51%	45%
30	23%	34%	28%		29%	43%	36%
31	24%	29%	26%		30%	36%	33%
32	15%	30%	22%		19%	37%	28%
33	12%	30%	21%		15%	37%	26%
34	14%	38%	26%		18%	48%	33%
35	17%	25%	21%		21%	32%	27%
36	14%	24%	19%		17%	31%	24%
37	45%	51%	48%		57%	65%	61%
38	50%	27%	39%		63%	34%	49%
39	33%	42%	38%		42%	52%	47%
40	34%	30%	32%		43%	38%	40%
41	28%	18%	23%		35%	22%	29%
42	15%	21%	18%		19%	26%	23%
43	25%	12%	19%		32%	15%	23%
44	19%	28%	23%		24%	35%	29%
45	23%	20%	21%		29%	25%	27%
46	19%	13%	16%		23%	17%	20%
47	51%	45%	48%		65%	57%	61%

48	42%	8%	25%		53%	10%	31%
49	25%	39%	32%		32%	49%	40%
50	18%	20%	19%		23%	25%	24%
Average	27%	29%	28%		34%	36%	35%

Summary:

- From the Strategic Research Plan Wild Horse and Burro Management, prepared by The Bureau of Land Management, Wild Horse and Burro Program U.S. Department of Interior Prepared in collaboration with U.S. Geological Survey, Biological Resources Division and Animal and Plant Health Inspection Service, Fort Collins, Colorado October 2003 (revised March 2005).

In 1988, the Department of the Interior's Board of Land Appeals decided that the wild horse and burro stocking levels and livestock numbers be set to achieve a "thriving natural ecological balance" for each herd management area. As noted earlier, the Federal Land Policy and Management Act of 1976, the Public Rangelands Improvement Act of 1978, and orders from Congress have directed the BLM to manage the number of wild equids to accommodate multiple uses of other resources and the long-term sustainability of the range.

- LSFO Common Term and Condition for Grazing Permits/Leases:
Unless there is a specific term and condition addressing utilization, the intensity of grazing use will ensure that no more than 50% of the key grass species and 40% of the key browse species current years growth, by weight, is utilized at the end of the grazing season for winter allotments and the end of the growing season for allotments used during the growing season. Application of this term needs to recognize recurring livestock management that includes opportunity for regrowth, opportunity for spring growth prior to grazing, or growing season deferment.

With a total of 143,568 acres of the HMA included in this monitoring effort the results are as follows and included in Map 1 below:

Utilization Range	Acres in HMA Monitoring Area	% of Total Acres Monitored
6 – 20%	5,125	4%
21 – 40%	104,586	73%
41 – 60%	19,002	13%
61 – 80%	14,855	10%

With no available guidance or reference to acceptable utilization by wild horses, this summary uses the LSFO grazing permit/lease Common Term and Condition (stated above) which specifies a 40% and 50% maximum utilization level for browse and herbaceous respectively.

The majority of the acreage monitored is within an acceptable level of utilization of 21 – 40%. However, this does not leave adequate forage available for the authorized winter grazing of sheep. As Table 1 – HMA Livestock Use Summary indicates authorized livestock use has been voluntarily reduced by permittees to maintain public land grazing sustainability.

The alarming trend is that 23% of the HMA has been utilized by wild horses above the acceptable levels that are applied to livestock grazing (41 – 60% and 61 – 80%), and that the lowest range of utilization (6 – 20%) constitutes the smallest amount of acreage monitored.

Given that 2014 was an above average precipitation year with precipitation coming at times for optimal plant growth and fall green up, one could extrapolate that on an average or below average precipitation year the levels and acreage of unacceptable utilization would increase exponentially.

This monitoring data shows that current wild horse population levels and population growth above these current levels are **not acceptable** to accommodate multiple uses of other resources and the long-term sustainability of the range.

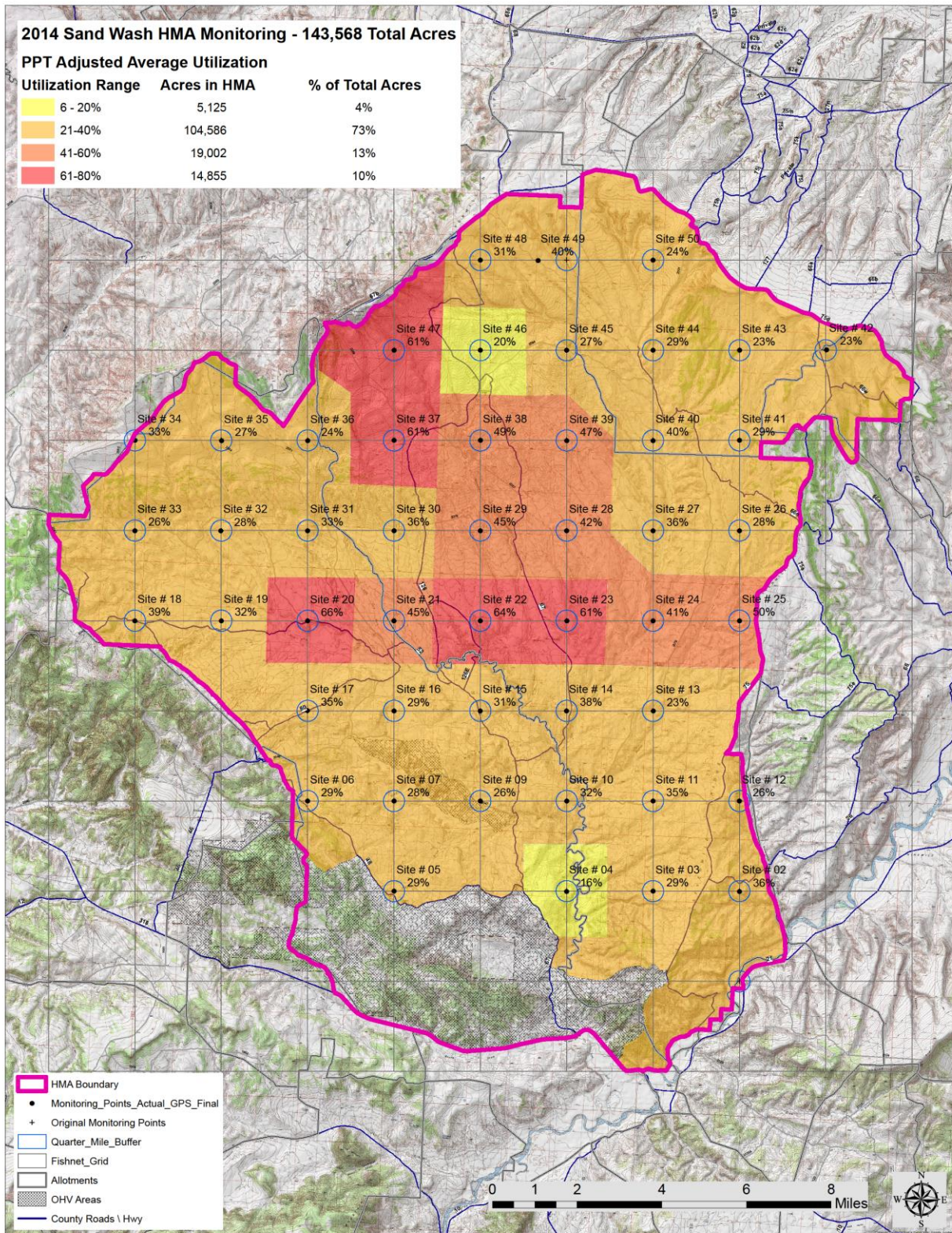
Greater Sage-Grouse (wildlife) Application:

Using the entire 157,730 acres within the HMA administrative boundary, approximately 59% (~93,475 acres) is greater sage-grouse preliminary priority habitat (PPH) as identified by Colorado Parks and Wildlife (CPW). The remainder of the acreage is identified as preliminary general habitat (PGH). The following table displays the wild horse PPT adjusted utilization data within HMA PPH.

Utilization Range	Acres in HMA PPH	% of Total PPH Acres
6 – 20%	4,007	4%
21 – 40%	60,050	64%
41 – 60%	16,893	18%
61 – 80%	12,525	13%

Once again, the alarming trend is that 31% of greater sage-grouse PPH within the HMA has been utilized by wild horses above the acceptable levels that are applied to livestock grazing (41 – 60% and 61 – 80%), and that the lowest range of utilization (6 – 20%) constitutes the smallest amount of acreage monitored. In addition to impacts to greater sage-grouse, this level of utilization going into winter forces big game species that uses these areas as winter habitat to search for alternative sustainable winter habitat.

Map 1



Notes for Map 1: The polygons that delineate the utilization classes displayed on the map and used to calculate acreage were digitized by hand. Each utilization polygon was digitized using a distance approximately halfway between the nearest sampling point of a different utilization class. The ID team agreed that this was an accurate and repeatable method to represent the entire HMA.

Project Leads/Summary Authors/ID Team

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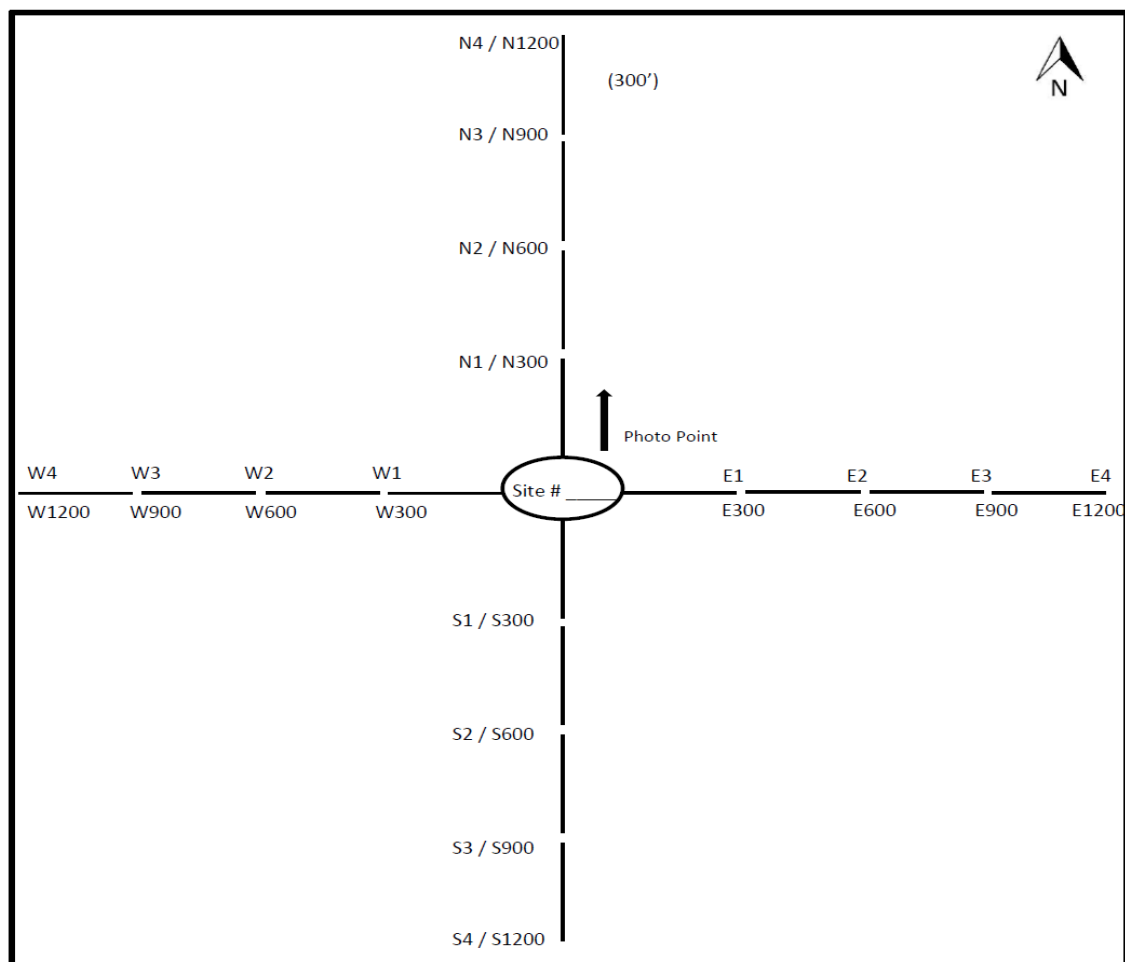
Shawn Wiser – Wildlife Biologist

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Hunter Seim – Supervisory Rangeland Management Specialist

Appendix 1: Site Layout

Site Layout Attachment
Study Location & Documentation Data



- Observation point taken every 300 ft. along transect. Observation point named after site and transect location. For example Site #32 would be 32N1, 32W2, etc or 32N300, 32N600, etc.
- Photo point taken from center of site location looking to the north.
- Modify site layout as applicable to site.
- Declination is 15°.

Appendix 2: Crop Year Precipitation Data

<i>Start Year</i>	<i>End Year</i>	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total Precip for Crop-Year
1988	1989	0	0	1.08	0.8	0.3	1.45	0.74	0.14	0.03	0.6	5.14
2011	2012	0.75	0.82	0.53	0.37	0.38	1.24	0.52	0.61	0.18	0	5.4
2001	2002	0.49	1.01	1.2	0.37	0.66	0.33	1.58	0.62	0	0.2	6.46
2003	2004	0.59	0.33	1.53	0.91	0.49	0.63	0.19	0.73	0.58	0.55	6.53
1989	1990	0.68	0.26	0.75	0.23	0.23	2.12	0.87	1.12	0.31	0	6.57
1999	2000	0.67	0.31	0.25	0.53	0.74	1.14	1	1.29	0.95	0.05	6.93
1962	1963	0.26	0.27	0.62	0.26	0.33	0.38	1.34	2.77	0.2	0.54	6.97
1960	1961	0.33	0.82	1.09	0.39	0.05	0.41	1.56	1.03	1.34	0.05	7.07
1965	1966	2.3	0.31	1.5	1.48	0.3	0.43	0.28	0.09	0.2	0.22	7.11
1968	1969	0	0.44	0.57	0.63	1.14	0.85	0.29	1.04	0	2.15	7.11
1991	1992	0.7	1.2	1.1	0.45	0.25	0.49	0.89	0.69	1.22	0.23	7.22
1987	1988	0.1	0.63	0.96	0.92	1.56	0.28	0.53	0.68	1.39	0.48	7.53
1993	1994	0.38	2.38	1.3	0.34	0.43	0.56	0.74	0.93	0.29	0.25	7.6
1971	1972	1.02	2.36	0.36	0.7	0.19	0.64	0.62	0.98	0.58	0.68	8.13
2005	2006	1.13	1.75	0.92	0.29	0.74	0.27	1.88	0.94	0.19	0.19	8.3
1963	1964	0.42	0.32	0.98	0.48	0.85	0.51	1.04	1.78	0.9	1.15	8.43
1986	1987	2.21	1.24	0.9	0.53	0.91	1.07	1.55	0.22	0.42	0.19	9.24
2002	2003	1.27	1.3	0.89	0.45	0.62	1.37	1.41	0.3	0.97	0.67	9.25
1990	1991	0.66	2.06	1.96	0.98	0.24	0.22	1.4	1.03	0.4	0.79	9.74
2000	2001	1.6	1.1	1.21	0.93	0.45	0.86	0.59	1.21	1.41	0.39	9.75
1959	1960	3.16	1.85	0.31	0.45	0.37	1.4	0.99	0.44	0.49	0.46	9.92
2009	2010	0.56	1.29	1.09	1.04	0.34	0.71	1.03	1.87	0.82	1.29	10.04
2012	2013	1.02	0.32	1.11	2.2	1.19	0.5	0.64	2.38	0.86	0	10.22
1969	1970	1.62	2.19	0.71	1.1	0.36	0.35	0.82	0.77	0.51	1.88	10.31
1992	1993	0.95	1.03	0.95	0.97	1.21	0.79	1.08	2.16	1.12	0.21	10.47
1972	1973	1.42	1.49	0.56	1.81	0.34	0.14	0.81	1.28	1.51	1.36	10.72
1966	1967	1	1.93	0.54	1.89	0.53	0.35	0.38	0.68	1.64	1.98	10.92
1973	1978	1.08	0.27	0	0	2.1	0.85	2.1	2.71	1.42	0.64	11.17
1985	1986	0.65	1.94	1.92	0.58	0.21	0.39	1.13	1.49	1.55	1.34	11.2
1967	1968	0.81	0.36	1.23	2.6	0.29	0.86	0.88	2.58	1.29	0.4	11.3
1961	1962	3.12	1.33	0.49	0.75	1.18	1.91	0.45	1.1	0.63	0.56	11.52
1995	1996	1.27	1.05	0.67	0.28	2.06	1.53	0.44	2.89	1.11	0.28	11.58
2006	2007	1.9	3.36	0.71	0.35	1.29	1.18	0.82	0.51	1.25	0.49	11.86
1970	1971	1.05	2.77	1.44	0.38	1.67	0.81	0.39	0.71	2.62	0.04	11.88
2013	2014	2.53	2.11	0.99	1.14	0.66	0.3	1.3	0.86	2.14	0.44	12.47
1979	1984	0.1	2.64	0.92	0.54	0.71	1.01	1.48	2.19	0.48	2.74	12.81
1996	1997	0.76	1.67	2.39	0.82	2.21	0.6	0.31	2.16	1.35	0.73	13

2004	2005	1.07	1.44	0.92	0.37	1.75	1.73	0.6	1.49	1.24	2.42	13.03
1998	1999	0.43	1.98	0.6	0.62	1	0.92	0.53	5.17	1.95	0.32	13.52
1964	1965	0.85	0.33	3.04	2.73	1.34	0.41	0.54	1.32	1.74	1.65	13.95
1997	1998	4.02	2.15	0.54	0.45	0.6	0.8	2.29	0.72	0.27	3.22	15.06
2007	2008	2.79	1.81	0.1	3.46	1.22	0.95	1.5	0.5	2.24	0.64	15.21
2008	2009	2.03	0.38	1.1	2.06	1.2	0.11	1.89	2.16	1.44	3.26	15.63
1984	1985	1.89	2.63	0.69	1.11	1.08	0.33	1.21	3.35	0.68	2.95	15.92
2010	2011	0.45	1.4	1.79	3.44	0.55	1.03	1.22	3.78	2.03	0.51	16.2
1994	1995	0.81	1.37	1.52	0.31	0.82	1.47	1.45	2.14	5.15	1.35	16.39
1978	1979	1.69	0.91	2.81	2.12	0.83	1.63	4.11	1.18	3.27	0.62	19.17

Appendix 3: Site Specific Notes

Site #	Comments
1	Abandoned; Site located on Colorado State Land Board parcel
2	Site 2W900 data not collected due to steep shale slope.
5	Three sites on the south leg of this transect were outside of the monitoring area and no data was collected (5S600, 5S900, 5S1200).
7	Site 7W876 was adjusted to stay out of the creek drainage then transect was continued from that point.
15	Site 15N 1090' instead of 1200'; transect continued onto Colorado State Land Board parcel so adjusted length accordingly.
16	No data was collected at site #'s 16N600 and 16N900 as both were located on a barren butte.
18	The south leg of the transect at site #18 wasn't collected because the area went into a reclaimed well pad and then into pinyon/juniper.
19	No observation was made at 19N1200, location was in a rock pile.
20	The interspaces at site #20 were noticeably bear of perennial vegetation. Perennial grasses were primarily found within the protected brush canopy.
27	The east and south transects at site #27 were omitted due to weather limitations that ended the monitoring season.
28	Site #28 had a noticeable lack of desirable herbaceous perennial grasses. When present these species have been utilized. Decline in population may be lost to preferential utilization.
29	No data was collected at Site #29S1200' as it was located on a rock cliff. Within this transect the interspaces were often void of vegetation.
31	Data was not collected at site #31N1200 - location was a rocky flat; Site #31E1149 was adjusted from 1200' due to topography.
32	The variety of aspects along these transects showed noticeable variations in browse use.
33	Site #'s 33W896 and 33W1200 were adjusted due to topography as noted on the site layout.
34	Data was not collected at site #'s 34N600, 34N900, 34N1200 or 34W600, 34W900, 34W1200 as these sites were located outside the fence.

41	No data collected at site #41E1200 due to steep slope.
44	Site #44E261 adjusted due to topography; Site #44S1152 adjusted due to juniper draw.
49	Site # 49 was relocated from original draft layout. Original site was located in steep drainage. Moved to the west to upland area.
50	No data collected at Site #50E900 and #50E1200 due to steep, deep drainage.

Appendix H
Sand Wash Basin Wild Horse Population Estimate



Sand Wash Basin Horse Census as of
23 June 2016

<i>Sand Wash Basin Horses TOTAL</i>	607	
Males over age 3	151	
Females over age 3	161	
Yearlings (2015 foals)	83	
	Males	48
	Females	35
2-Year Olds (2014 foals)	92	
	Males	43
	Females	49
3-Year Olds (2013 foals)	63	
	Males	36
	Females	27
<i>Adjusted SWB Horses Total*</i>	550	

**Adjusted total does not include 2016 foals*

<i>2016 Foals as of report date</i>	57	
	Males	29
	Females	28

Data collection and verification by Data prepared by Aleta Wolf
SWAT via visual spotting Sand Wash Advocate Team
and photographic comparison 23 June 2016